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Contents

EDITORIAL:

Editorial Notes	883
*Chicago, Burlington & Quincy.....	884
*Southern Pacific	886

MISCELLANEOUS:

*Construction of the New York Connecting Railroad.....	888
Industrial Railways Case	892
Railway Affairs in Other Countries.....	893
The Progress of Public Enlightenment; by Frank W. Noxon.....	894
The Arguments of Mr. Brandeis and Mr. Brownell.....	895
Freight Car Surpluses and Shortages; by Arthur Hale.....	902
Report on Tipton Ford Collision.....	904
*Convention of Railway Electrical Engineers' Association.....	905
Convention of Railway Development Association.....	909
GENERAL NEWS SECTION	914

*Illustrated.

The politicians in various state legislatures have passed and the politician governors of various states have signed so-called "full crew" bills on the assumption that such legislation would be popular. The first

complete and satisfactory test of its popularity was made in Missouri at the election last week. The state legislature had

passed a typical train crew law. The railways appealed to the people on the referendum ballot. The representatives of the Brotherhood of Railroad Trainmen left no stone unturned to prevent the law from being repealed, and plastered half the bill-

Full Crew
Referendum in
Missouri

boards in the state with misleading statistics intended to make the voters believe that train crew laws were needed to reduce railway accidents. The railways likewise conducted a state-wide campaign, taking the form chiefly of newspaper articles and advertisements. Their two great arguments were first, that the legislation would not reduce accidents because accidents were not due to the alleged fact that train crews were not large enough, and, second, that the legislation would add \$500,000 a year to the expenses of the railways and the passenger and freight rates that their patrons must pay. The railways won. The people knocked out the law by a decisive majority. The result illustrates the fact that politicians often misrepresent what the people want and that when the railways can get before the public the facts regarding regulative measures the public can usually be depended on to decide intelligently and fairly. One great trouble has been that the railways have not tried often enough and hard enough to get their case before the public. The result in Missouri should encourage them to appeal more frequently from legislatures, commissions and courts to the people. It should also help to defeat the senseless train crew bills in states where they are pending and to secure the repeal of the laws on the subject that already are in effect in several states.

Trip passes issued by 78 railroads in 1913 represented travel, which, if paid for, would have brought in \$18,520,000. This

**Alleged
Abuse of
Passes**
statement was one of the shining passages in the Interstate Commerce Commission's decision in the 5 per cent freight rate case, issued last July, and one which naturally elicited the loudest applause

from the galleries. Less prominent was the qualifying clause that "some of these passes were no doubt issued to employees traveling on business for the carriers." Excepting specific citations of cases of undue liberality in furnishing private cars for directors' families, this looseness of statement characterized the whole of the commission's chapter on passes. The president of one of the Trunk Lines, quoted in the New York Evening Post, now says that on his road the passes issued in June (the month specially cited by the commission) numbered 8,717; of which 4,486 were for officers and employees of his own company and 3,408 were for their families. This leaves 823 for all others, including officers and employees of other roads. In other words, the abuse, insofar as it is an abuse, is of less than one-tenth the magnitude which the commission's figures, as commonly interpreted, would make out. This president further says:

To cut off passes for employees would not materially increase passenger traffic or revenue. Most of this travel is of a character which would not be done at all if passes were not issued, and practically all the remainder is travel the expense of which would be reimbursed by the company. Free transportation to employees induces a better feeling among them; far better results are obtained from them in a business way, and a loyalty to the company developed which brings actual results to the stockholders. They patronize the dining cars and other facilities of the road, bringing in increased revenue. . . . None of the figures here given apply to the issuance of annual passes. It is the custom of general officers to send annuals to general officers of other companies; but business of their own company, with a constant demand for travel upon their own lines, makes their journeys for pleasure on other roads very infrequent.

That the views here expressed are eminently sound, has been evidenced by long experience. Free rides for employees and their families, a large proportion of which are for pleasure trips, constitute, when properly regulated, one of the most rational expenditures of a railroad. Even the brotherhood leaders, whose wishes usually prevail at Washington, agree to this. The actual cost of this passenger service is, undoubtedly, far less than the money value of the good will which results. Free rides for employees of other roads are almost equally justifiable. Moreover, most of the interstate passes allowed by law, outside of those for railroad men, are for charitable or philanthropic purposes. Is there any public sentiment opposed to this use of railroad facilities?

Arthur Hale has prepared for the Western Economic Society a very interesting paper on Freight Car Surpluses and Shortages, which we publish elsewhere in this issue.

**Car Surpluses
and
Car Shortages**

That Mr. Hale or any one else is able to discuss this subject intelligently is due to the fact that following the great car shortage of 1906, the American Railway Association began the compilation of the statistics to which Mr. Hale refers. Nobody was able before the compilation of these statistics was begun to say with any certainty whether the railways of the United States had provided enough equipment to move their normal traffic, and in consequence when a severe car shortage did come the railways were subjected to widespread and severe criticism and to drastic laws specifying the conditions under which they must furnish cars to shippers and penalties that would be imposed if they failed to do so. The compilation of the statistics since that time renders it possible for us to know just what the car situation has been fortnightly for more than seven years. We know that there have been during these years some brief and comparatively small car shortages and that there have been numerous prolonged and very large car surpluses. In other words, the figures afford a complete answer to any criticism which may now or in future be made of the railways regarding the facilities provided by them during this period at least. Aside from their value in showing what the car situation has been and thereby serving as a protection against unjust criticism and legislation, the statistics undoubtedly have been of some value as means of increasing efficiency in the operation of the railways. For example, the comparative statistics regarding car miles per day on the different roads undoubtedly have had a stimulating effect on their managements. The statistics have been of such great and unmistakable value in numerous ways that it is to be hoped their compilation will be continued indefinitely.

CHICAGO, BURLINGTON & QUINCY

THE Burlington was fortunate in the fiscal year ended June 30, 1914, in that the crops in its territory were good and there was actually a larger movement of grain than in the previous year. The result was that although the Burlington felt the general depression to some extent in its freight business—the total tonnage carried in 1914 being 32,389,000 tons as against 33,458,000 tons in 1913—the total loss was in tonnage delivered to it by other roads, the tonnage originating on the Burlington being 22,547,000 tons in 1914 and 22,531,000 tons in 1913. Passenger business was considerably better in 1914 than in 1913, so that despite the considerably lower passenger-mile rate, due to the Supreme Court's decision in the two-cent fare law cases, passenger earnings held up. Total operating revenue in 1914 amounted to \$92,751,000, compared with \$94,374,000 operating revenue in 1913. Expenses decreased to a small extent, other income slightly decreased and rents increased. The result was that net corporate income in 1914 amounted to \$17,114,000 as against \$19,431,000 in the previous year, and after the payment of the regular 8 per cent dividends there was appropriated for additions and betterments \$5,716,000, and there remained in addition \$2,531,000 which was credited to surplus. This compares with an appropriation of \$7,648,000 for additions and betterments in 1913 and a surplus of \$2,916,000 after this appropriation.

The Chicago, Burlington & Quincy seems such a remarkably wealthy property because of three factors. It serves a rich originating territory. Its outstanding securities are at an unusually low ratio to the total property investment, this investment having been consistently added to from earnings belonging to the owners. The road is particularly well managed. Comparatively few railroads in any country combine these three factors to the extent that the Burlington does.

The company operates 9,264 miles of road, of which 836 miles has second track and 42 miles third track, with a total of 2,920

miles of yard tracks and sidings. About 140 miles of new line was opened during the year, this new line being the extension south from Laurel, Mont., to Orin Junction, to connect with the Colorado & Southern, the principal subsidiary of the Burlington. There was 72 miles of second track added during the year, and 19 miles of third track and about 66 miles of yard tracks and sidings. Since a very large proportion of the Burlington's mileage is branch line mileage, or what might more properly be called feeder mileage, it will be seen that for a road west of Chicago it has a large proportion of second track and especially of sidings.

Of the total revenue about 68 per cent comes from freight and 23 per cent from passengers. On the other hand, in 1914 the total mileage of freight trains was 17,066,000, and passenger-train mileage 17,721,000. The freight and passenger density appears smaller because of the large proportion of feeder mileage; but the density on main line is actually remarkably heavy. The average for the whole road was 126,000 passengers one mile per mile of road in 1914 and 125,000 in 1913, and 942,000 ton-miles per mile of road in 1914 and 965,000 ton-miles per mile of road in 1913.

The average passenger journey is short, 49 miles in 1914, with no change from 1913. The receipts per passenger per mile are low for a western road, 1.888 cents in 1914 and 1.921 cents in 1913, the reduction being due, at least in part, to the Supreme Court's decision upholding the two-cent fare laws.

The average length of haul of freight is long for a road with so much branch line mileage, 266 miles in 1914 and 263 miles in 1913. The receipts per ton per mile are not high for an originating road, 7.29 mills in both 1914 and 1913.

As was previously mentioned, all of the loss in freight business came from a reduction in the tonnage received from connections, the total tonnage of all commodities carried in 1914 being 32,389,000, of which 22,547,000 originated on the road and 9,842,000 was received from connections. In 1913 the total tonnage was 33,458,000 tons, of which 22,531,000 tons originated on the road and 10,927,000 was received from connections. The principal decrease in 1914 as compared with 1913 was in the tonnage of bituminous coal received from connections. The total tonnage of bituminous coal carried in 1914 amounted to 10,069,000 tons, or 31.09 per cent of the total revenue tonnage, and of this total 8,339,000 originated on the road and 1,730,000 tons was received from connections. In 1913 the bituminous coal tonnage totaled 10,349,000 tons, or 30.93 per cent of the total revenue tonnage in that year, and of this total coal tonnage 7,764,000 tons originated on the road and 2,584,000 tons was received from connections. The total tonnage of grain in 1914 amounted to 4,309,000, or 13.30 per cent of the total revenue tonnage, comparing with a grain tonnage of 3,919,000 in 1913, or 11.71 per cent of the total revenue tonnage carried in that year.

Total operating expenses in 1914 amounted to \$62,148,000 as against \$62,843,000. It will be seen that expenses were not reduced in proportion to the loss in revenue; the operating ratio was 67.01 in 1914 as against 66.59 in 1913. The following table shows the percentage of each class of operating expense to total operating revenues:

	1914	1913
Maintenance of way and structures.....	12.94	13.28
Maintenance of equipment.....	17.13	17.10
Traffic expenses	1.76	1.68
Transportation expenses	32.59	31.79
General expenses	2.59	2.74
Total	67.01	66.59

The reduction of, roughly, \$500,000 in maintenance of way is accounted for by a reduction in the amount spent for rails, other track materials and roadway labor, and by a considerable reduction in the amount spent for buildings, fixtures and grounds, the amount on this latter account being \$1,262,000 in 1914 and \$1,693,000 in 1913. In part these reductions are offset

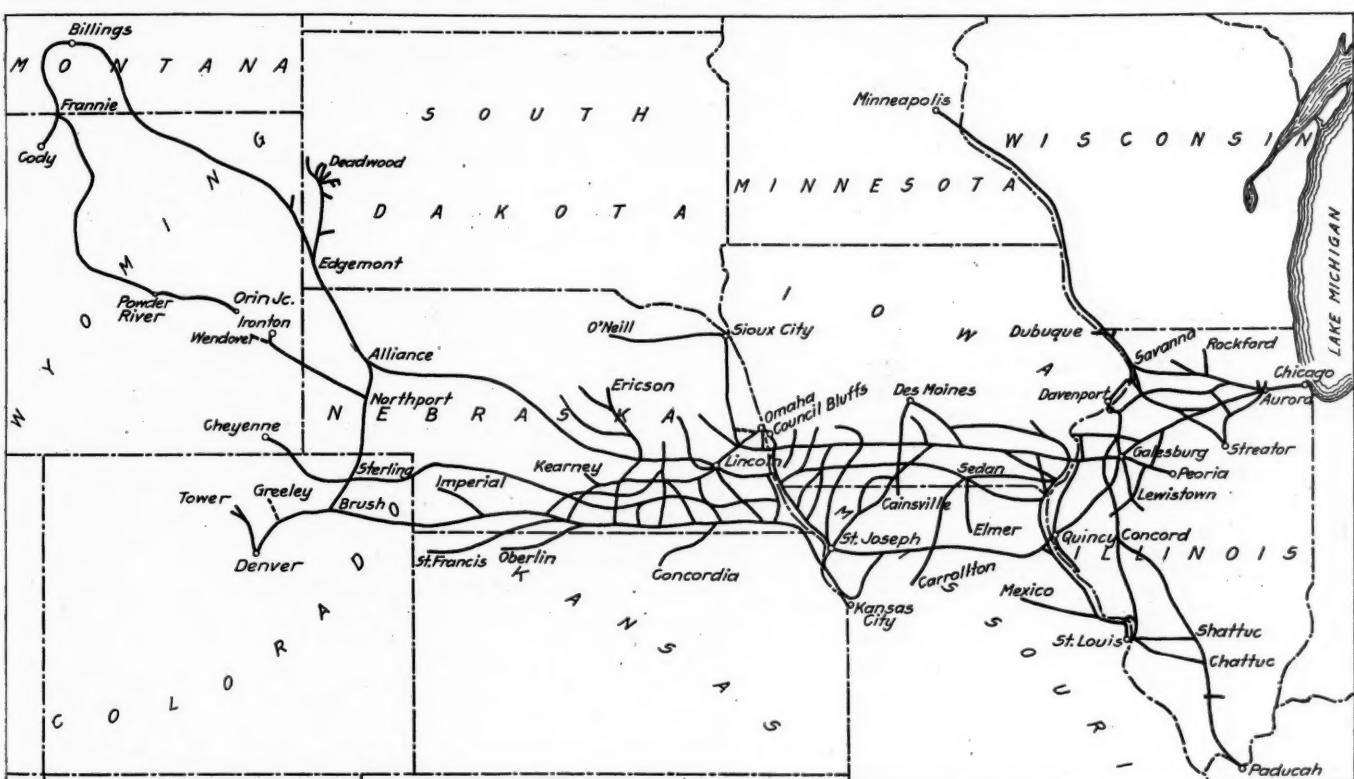
by an expenditure of \$2,112,000 on ties, as compared with \$1,711,000 in 1913.

In maintenance of equipment the reduction of \$245,000 is entirely due to smaller amounts charged to renewals of freight-train cars, \$855,000 being charged on this account in 1914 as against \$1,698,000 in 1913. In part this reduction was offset by larger charges for repairs and for depreciation. Since the renewals charge represents the original cost, less salvage and depreciation on equipment retired, it is a bookkeeping matter and not a matter of actual money expenditure. In 1914 3,179 freight cars were retired as against 3,995 in 1913. On the other hand, 12,601 cars were added in 1914 as against 4,004 cars in 1913.

Transportation expenses amounted to \$30,225,000 in 1914 as against \$29,998,000 in 1913. This is an increase of less than 1 per cent, with a decrease of about 2 per cent in ton mileage and an increase of about 1 per cent in passenger mileage. The increase in transportation expenses is due almost entirely to increases in the amounts paid for loss and damage to freight, damage to property and injuries to persons. This may, of course, be due to more prompt settlement of claims or to the payment of claims arising out of the previous year's business. There was some saving in the expense for fuel for road loco-

erty account and \$2,367,000 to income, and of the expenditure for equipment \$7,414,000 was charged to property and \$3,358,000 to income. Since 1907 the company has charged \$27,146,000 spent for additions and betterments to income, and in addition has a surplus of \$93,000,000, which, however, by no means measures the surplus which would be shown if the present Interstate Commerce Commission rules had been in effect for some years previous to 1907, since before that the Burlington had been charging additions and betterments to income account without carrying these accounts as appropriated surplus on the balance sheet. Since both surplus and appropriated surplus represent excess of assets over liabilities, what this means, stripped of accounting technicalities, is that there has been something more than \$120,000,000 invested in the Burlington property against which no securities have been issued, and, of course, the greater part of this excess in assets is in the form of fixed capital—property, not money.

The net increase in securities outstanding in the hands of the public was \$5,825,000 during the year, there having been sold \$5,000,000 general mortgage 4 per cent bonds and some additional bonds of this issue to cancel bonds paid at maturity. The unextinguished discount on funded debt amounted to \$2,329,000 on June 30, 1914, as compared with \$657,000 on June 30,



The Chicago, Burlington & Quincy

motives, \$5,771,000 being spent on this account in 1914 as against \$5,935,000 in the previous year. Some of the increase in transportation expenses can be explained by a much larger empty car movement, as can also the decrease in average revenue trainload. The trainload in 1914 was 479 tons, and in 1913 484 tons. The mileage of loaded cars was 452,000,000 in 1914, a decrease of nearly 9,000,000 miles, while the mileage of empty cars was 212,000,000, an increase of about 18,600,000. The average loading per loaded car remained about the same in the two years, 19 tons.

The Burlington spent in all \$19,073,000 for extensions, new equipment and additions and betterments in 1914. Of this amount \$2,216,000 net was for new lines, \$6,085,000 for additions and betterments to road, and \$10,772,000 for equipment. Of the expenditures for road \$3,719,000 was charged to prop-

1913, and in addition \$45,000 was charged to income of the year for discount on securities, on the other hand other deferred debit items decreased being \$975,000 in 1914 and \$2,593,000 in 1913. There was \$4,815,000 cash on hand at the beginning of the year, with total working liabilities of \$11,469,000, with no loans and bills payable, and at the end of the year \$6,516,000 cash on hand and \$15,180,000 working liabilities, which included \$1,900,000 loans and bills payable. In other words, despite Clifford Thorne's opinion to the contrary, one of the very strongest railroad companies in the entire country could not sell 4½ per cent bonds, even to a comparatively small amount, except at a very considerable discount; and despite the fact that a very large amount of money representing surplus belonging to the stockholders is invested each year in property, nevertheless, the Burlington will have to come into the market for new capital

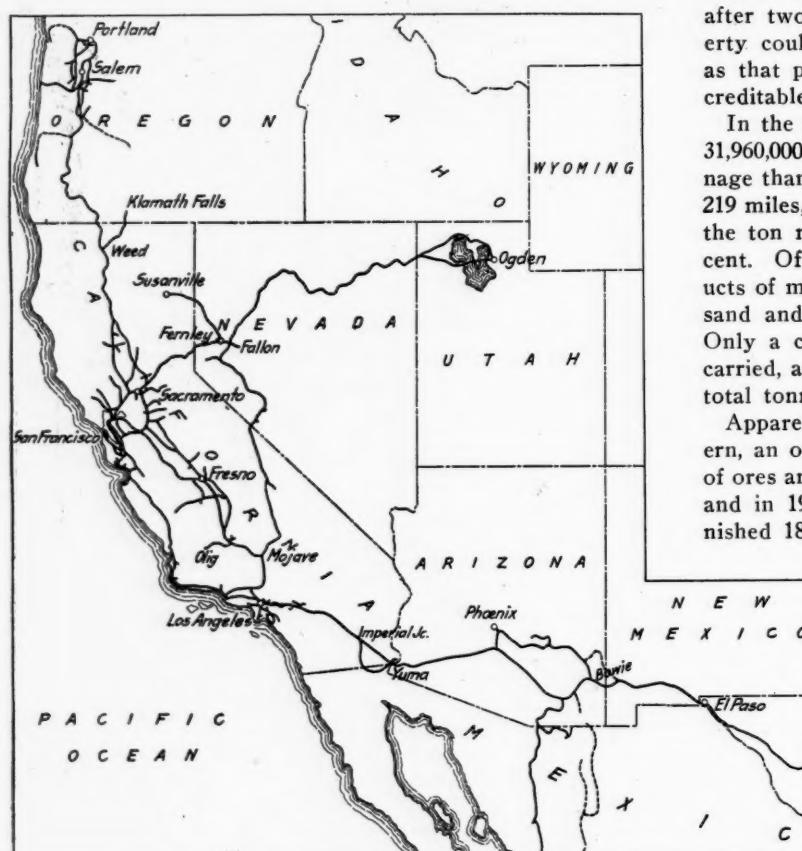
in the not distant future if it is to continue the policy of extensive expenditures on additions and improvements each year.

The following table shows the principal figures for operation in 1914 as compared with 1913:

	1914	1913
Mileage operated	9,264	9,129
Freight revenue	\$62,799,188	\$64,046,856
Passenger revenue	21,743,507	21,895,691
Total operating revenue	92,750,934	94,374,486
Maint. of way and structures.....	12,002,628	12,535,863
Maint. of equipment.....	15,888,686	16,133,215
Traffic expenses.....	1,634,672	1,586,803
Transportation expenses.....	30,224,524	29,997,717
General expenses.....	2,397,888	2,589,293
Total operating expenses.....	62,148,398	62,842,891
Taxes	4,028,900	3,563,359
Operating income	26,433,388	27,840,545
Gross income	27,934,465	29,800,475
Net income	17,114,407	19,430,746
Dividends	8,867,128	8,867,128
Appropriated for additions and betterments	5,715,875	7,647,743
Surplus	2,531,404	2,915,875

SOUTHERN PACIFIC

NO better measure of the equity back of Southern Pacific common stock could be given than the way in which the plant and the organization have withstood the extraordinary strain put on them in the fiscal year ended June 30, 1914. Floods, fire and unprecedented rains caused interruptions to traffic to an extent never before recorded for a railroad covering such a vast territory as does the Southern Pacific. On



The Southern Pacific System

the 10,477 miles of road operated in this system there were 227 interruptions to traffic, with an average delay of three days each, in the fiscal year ended June 30, 1914. In every month except November, as Mr. Kruttschnitt, chairman of the executive committee, points out, damages from washouts and landslides were frequent and embarrassing. Added to the loss in both freight and passenger traffic caused by the peculiarly perverse weather conditions, there was a distinct loss in passenger traffic because of the number of passengers who might have gone to California, but who preferred to put off their trip until the Panama exhibition.

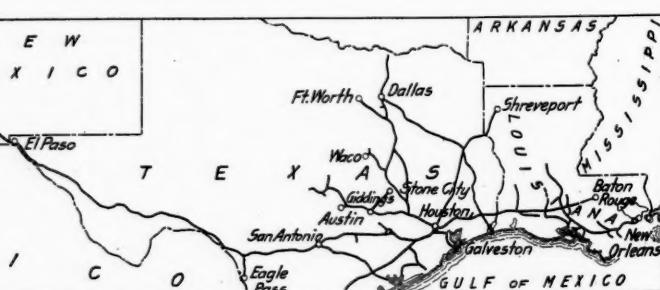
Notwithstanding all this, total operating revenues decreased but 2.87 per cent and expenses increased by less than one per cent. After the payment of expenses, taxes and interest charges the Southern Pacific had in 1914, \$20,452,000 available for dividends, compared with \$26,868,000 available for dividends in the previous year. Six per cent on the common stock outstanding calls for \$16,361,000, so that there was a margin of safety back of the dividend, even last year, of \$4,091,000.

The Southern Pacific system consists of the Southern Pacific Company and proprietary companies. It is divided for convenience of the operating management as between lines east of El Paso and lines west of El Paso. The lines west include, of course, the Central Pacific, running from Ogden to San Francisco.

The annual report for 1914 is the thirtieth of the company. The Southern Pacific and the Great Northern are the only two of the great transcontinental systems which have never been through a receivership. Under Collis P. Huntington, the Southern Pacific had plowed into it a huge surplus, and in the early days of the Southern Pacific especially, the Golden State was indeed a golden state for the railroad, which had so large a share of its transportation business. The Huntington regime was a generous one, both to officers and employees and in maintenance of the property. The Harriman regime which followed continued a liberal policy of maintenance and was fortunate in inheriting the Southern Pacific organization. This, then, is the reason why, even after two years of strikes and other misfortunes, the property could go through such an extraordinary severe strain as that put on it in 1914 and still make such a thoroughly creditable showing.

In the fiscal year ended June 30, 1914, the system handled 31,960,000 tons of freight, or exactly one per cent more tonnage than in 1913. The average length of haul, however, was 219 miles, as compared with 222 miles the year before, so that the ton mileage handled was less by about half of one per cent. Of the total tonnage in 1914, 36.74 per cent was products of mines, but of this the greater part was ore, stone and sand and other mine products, exclusive of coke and coal. Only a comparatively few carloads of anthracite coal were carried, and bituminous coal furnished only 2 per cent of the total tonnage in 1914.

Apparently the results of the purchase of the Arizona Eastern, an ore carrying road, are marked. In 1912 the tonnage of ores amounted to but 593,000 tons; in 1913 to 2,957,000 tons, and in 1914 to 3,626,000 tons. Products of agriculture furnished 18.16 per cent of the total tonnage in 1914, products



of lumber 17.89 per cent, and manufactures 14.88 per cent. There was a large falling off in the tonnage of manufactures, 4,755,000 tons being carried in 1914 as against 5,115,000 tons in the previous year, and a considerable falling off in products of forests, 5,717,000 tons being carried in 1914 as against 5,910,000 tons in the previous year. The average ton-mile rate in 1914 was 1.110 cents; in 1913, 1.123 cents. Total freight revenue was \$78,369,000 in 1914, as against \$80,141,000 in the previous year.

As in the case of the number of tons of freight, the number of passengers carried decreased, being 42,745,000 in 1914, as

against \$42,006,000 in 1913; but the average length of journey decreased, being 40.92 miles last year as against 43.67 miles in the previous year, a decrease of 6.30 per cent. The passenger mileage, therefore, decreased by 4.66 per cent. The average revenue per passenger per mile was 2.247 cents in 1914 and 2.248 cents in 1913. Total passenger revenue amounted to \$40,486,000 in 1914 as against \$42,490,000 in the year 1913.

With a decrease in the ton-miles handled of 0.66 per cent and in the passenger-miles handled of 4.66 per cent, there was an increase in total operating expenses of 0.81 per cent, a decrease of 3.02 per cent in freight-train mileage, an increase of 2.15 per cent in passenger-train mileage, and an increase in the average trainload of all freight of 2.25 per cent, the average in 1914 being 471 tons and in 1913 461 tons.

In expenses for the year an increase of \$475,000 in maintenance of way was in part offset by a decrease of \$361,000 in maintenance of equipment, and a decrease of \$226,000 in traffic expenses was more than offset by an increase of \$249,000 in general expenses. Maintenance of way and structures amounted to \$16,064,000 in 1914. It is estimated that repairs of flood damages amounted to an extraordinary expense of \$880,000, and in California alone \$1,284,000 additional will be required to complete these extraordinary repairs. Of this amount \$475,000, it is estimated, will be chargeable to operating expenses next year and \$809,000 to additions and betterments.

Maintenance of equipment cost \$18,934,000 in 1914. This included charges of \$609,000 for depreciation of locomotives, \$279,000 for depreciation of passenger cars and \$1,060,000 for depreciation of freight-train cars. The Southern Pacific has never before included a charge for depreciation, but has at last acquiesced in the Interstate Commerce Commission's requirements in this respect. Besides the charge in 1914 a charge of \$22,458,000 was made to profit and loss and credited to accrued depreciation on the asset side of the balance sheet for estimated depreciation between July 1, 1907, when the Interstate Commerce Commission's ruling went into effect, to July 1, 1913. The following table shows the expenditures for repairs per unit of equipment, exclusive of depreciation and renewals, in 1914 and 1913:

	1914	1913
Repairs per locomotive.....	\$3,920	\$4,721
Repairs per passenger car.....	838	865
Repairs per freight car	93	94

The state of repairs of locomotives was not quite so good at the end of the year as at the beginning. Thirty-eight per cent of the total number of locomotives in service were in thorough order at the end of the year, as against 40 per cent at the beginning of the year, and 29 per cent were in good order as against 28 per cent at the beginning of the year, and 32 per cent required repairs or were in shop under repair as against 28 per cent at the beginning of the year.

Transportation expenses amounted to \$40,937,000 in 1914 and the principal increases are in cost of fuel for road locomotives, operating joint yards and terminals, train supplies and expenses, and injuries to persons. The increase in cost of fuel was largely due to the higher price paid for fuel oil, the cost per ton of coal being \$2.87 in 1914 and \$2.90 in 1913, while the cost of four barrels of oil, which is figured as the equivalent of a ton of coal, was \$2.59 in 1914 as against \$2.37 in 1913. Thus the average cost of fuel per ton was \$2.60 in 1914 as against \$2.40 in 1913. The number of miles run per ton of fuel was 14.83 in 1914 and 14.23 in 1913.

During the year the Southern Pacific sold to its own stockholders at par \$54,534,000 20-year 5 per cent convertible bonds. The conversion privilege permits of exchange of bonds for stock at par at any time up to June 1, 1924. The proceeds of the sale of these bonds were used in part to pay off \$26,000,000 one-year 5 per cent notes, which fell due June 15, 1914. In addition there was \$7,130,000 equipment trust certificates sold

and \$6,000,000 one-year 5 per cent notes. The net expenditure during the fiscal year ended June 30, 1914, for equipment and additions and betterments was \$19,756,000. As of June 30 the company had on hand \$19,170,000 cash and deposits, about \$148,000 less than at the beginning of the year, and in addition to the expenditures on its own property mentioned above, had advanced to affiliated companies during the year \$14,578,000, making the total now \$105,525,000. There are no loans and bills payable, and audited accounts and wages payable at the end of the year amounted to \$8,259,000, a decrease of \$4,588,000 in this account during the year.

The Southern Pacific has an enormous asset which is not carried at any money value on its balance sheet. This is the title to oil lands belonging to the Southern Pacific Railroad Company and the Kern Trading & Oil Company. The Supreme Court held in June, 1914, that except where title to these lands had been obtained by fraud, the title could not be attacked because they were now found to contain oil. In Mr. Kruttschnitt's opinion the Southern Pacific's title to the valuable lands may now be regarded as unassailable.

There is, of course, the Central Pacific merger suit, which is now slowly being fought through the courts.

Mr. Kruttschnitt, like the late E. H. Harriman, is by nature an optimist. His remarks, therefore, in regard to the present state of the railroad business are particularly impressive:

"Your Board repeats the suggestion made last year that you take an active part in repelling the attacks of demagogues on your property. Unfair treatment of railroads is due in great part to the belief of politicians that only financial magnates suffer therefrom. The surest remedy for the evil is for railroad investors to give unmistakable evidence of their numbers and of their resentment of unfair legislation or regulation. You now number over 30,000, and with the stockholders of other railroads and with investors in their securities you form a body of a million or more voters, whose protests, backed up by ballots, can lawfully exert sufficient force to compel fair treatment by your servants in Congress, in legislatures, and on commissions. The common interests of railroad shareholders and of investors in every community, no matter how small, should cause them to actively participate in every election and to perform faithfully all other duties of citizenship, in order to secure proper representatives and protection for their interests. While your company has cheerfully made such expenditures as were required by Federal or State commissions or by legislation, many unreasonable laws have been enacted, which serve no public good, and which add unnecessarily to the cost of operation. . . .

"The reduction of our surplus over fixed and other charges, due to causes largely beyond control, has imposed on your company the necessity of reducing the expenditures for new construction, additions to and betterments of the property, to the lowest possible limits. The uncompleted work, listed above, is being slowly carried on to protect the investment already made, but no extensions or improvements of any description, not imperatively needed for protection of the property, are being authorized or even considered."

The following table shows the principal figures for operation in 1914 as compared with 1913:

	1914	1913
Average mileage operated	10,422	10,311
Freight revenue	\$78,369,414	\$80,141,499
Passenger revenue	40,485,949	42,389,837
Total operating revenue.....	126,614,537	130,353,693
Maint. of way and structures.....	16,064,457	15,589,027
Maint. of equipment	18,934,335	19,295,725
Traffic expenses	2,889,419	3,115,079
Transportation expenses	40,936,821	40,408,954
General expenses	3,975,035	3,726,326
Total operating expenses.....	82,800,068	82,135,109
Taxes	7,162,625	5,697,286
Operating income	37,695,367	44,208,009
Gross income	51,799,058	56,558,542
Net income	20,452,216	26,867,807
Dividends	16,361,088	16,360,932
Surplus	4,091,127	10,506,875

Construction of the New York Connecting Railroad

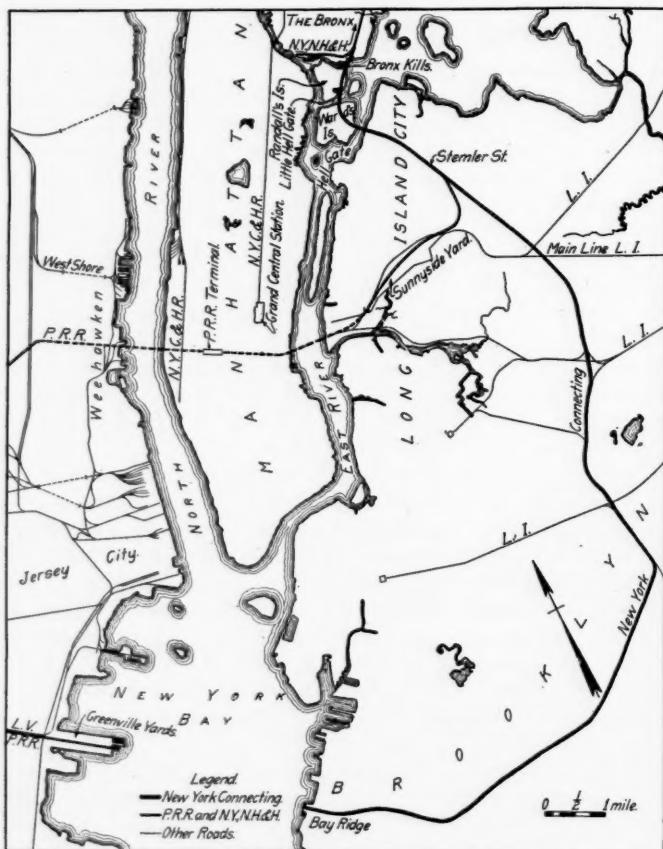
Ten Mile Line Involving Large Bridges and Viaducts
Will Connect the Pennsylvania and New Haven

Construction work has now been in progress for more than two years on the New York Connecting Railroad, which will provide a direct connection between the New Haven and the Pennsylvania Railroad Systems, and the first section of the new line, which will be used for passenger traffic only, is nearing completion. On account of the location of this line in well-improved sections of the boroughs of Queens and the Bronx, and the heavy structures required to span the East river, Little Hell Gate, and the Bronx Kill, the cost of this 10-mile road will probably approximate \$30,000,000, or \$3,000,000 per mile. It will form an important link between two great systems, however, making possible direct connections for both freight and passenger traffic between New England and the central west and the south. The northern end of the new line, which is

ing under the East river, Manhattan Island, and the Hudson river in the Pennsylvania's tunnels, and connecting directly with the main line for the west. The freight line, which is also a part of this project, but is not yet under construction, will continue east and south to a connection with the old Manhattan Beach road of the Long Island system, over which freight trains will be operated to Bay Ridge, directly opposite the Greenville, N. J., freight yards of the Pennsylvania. A ferry service connects these points.

The construction of this connecting road is a joint enterprise of the New Haven and the Pennsylvania. The portion known as the East river bridge division, extending from the New Haven connection in the Bronx to Stemler street in Long Island City, is being built by the New York Connecting Railroad, of which Gustav Lindenthal is chief engineer, and the portion from Stemler street to the end of the passenger connection at Sunnyside yard, known as the Southern Division, is being handled by the engineering department of the Pennsylvania Railroad, A. C. Shand, chief engineer, and H. C. Booz, assistant chief engineer.

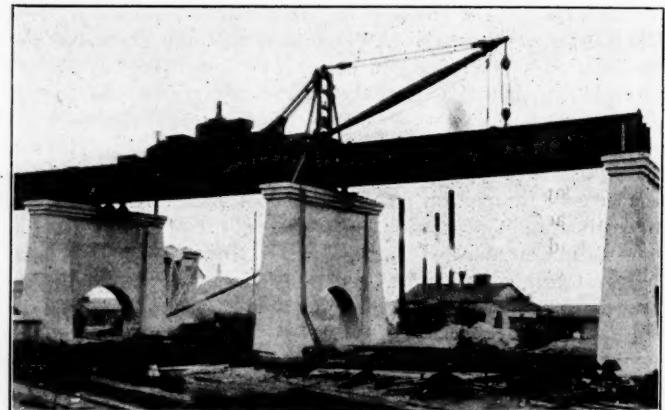
The new line is elevated for practically its entire length in order to reach the necessary height at the crossing of the East river, and also to eliminate grade crossings with the streets in



Map of New York and Vicinity Showing Location of the New York Connecting Railroad

being built at present, will have four tracks—two for passenger and two for freight traffic. On the completion of this section it is expected to operate through trains between Boston and Chicago, Cincinnati, New Orleans, Washington, and southern Atlantic coast points, over this connecting line. Former President Mellen of the New Haven estimated that the new line would handle at least 40 passenger trains a day.

The road will leave the New Haven's Harlem River branch, at 142nd street in the Bronx, cross the Bronx Kill to Randall's island, then across Little Hell Gate to Ward's island, then turning sharply to the left will cross Hell Gate to Long Island City on an arch bridge having the longest span in the world. A connection is made in Long Island City with the Pennsylvania System through the Sunnyside yard, which is the end of the present work. Passenger trains will use this connection, pass-



Erecting the Superstructure of the Bronx Viaduct

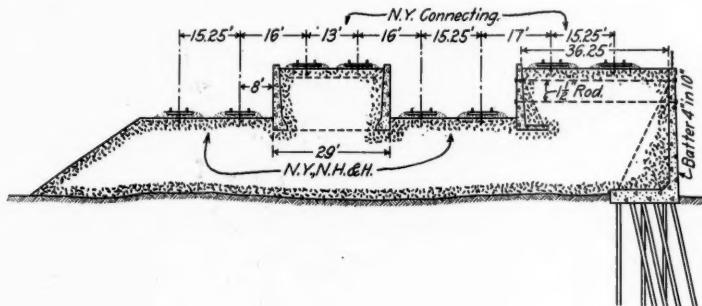
the Bronx and in Long Island City. The grade is continually rising from the New Haven connection to the Hell Gate bridge, the maximum being 1.2 per cent. The grade is level over the arch bridge, and then descends on a maximum grade of 0.72 per cent to Stemler street. The maximum elevation attained is over the East river, where the base of rail is about 145 ft. above mean high water.

Beginning at the New Haven connection at 142nd street, the first section of the line, known as the Bronx viaduct, extends to the Bronx Kill bridge about seven-eighths of a mile. The section over Randall's island, known as the Randall's island viaduct, is about three-eighths of a mile long, and from 75 to 100 ft. high. After crossing the Little Hell Gate bridge another viaduct is used to cross Ward's island, a length of about one-half mile. This viaduct reaches a maximum height of about 135 ft. The line makes a 3 deg. 10 min. curve to the left over Ward's island, approaching the Hell Gate arch bridge, the central angle being nearly 90 deg. The section south of this bridge includes the Long Island viaduct and the Eastern viaduct, having a combined length of a little over one mile. With the exception of short sections at the two ends where retaining walls and earth fill are used, the entire line is carried on steel and concrete viaducts and bridges. About 150 viaduct piers were required, the masonry work containing 450,000 cu. yd. of concrete,

with about 5,000 tons of steel reinforcement. The steel superstructure will total about 90,000 tons.

BRONX VIADUCT TO HELL GATE

The four New York Connecting tracks join the four New Haven tracks at 142nd street in the Bronx, the New Haven tracks being spread to allow two of the new tracks to be located in the middle of the old layout. The other two new tracks are constructed on the east side of the old line, all four tracks being laid on earth fill between retaining walls as far south as 138th street. The retaining walls and the additions to the bridge



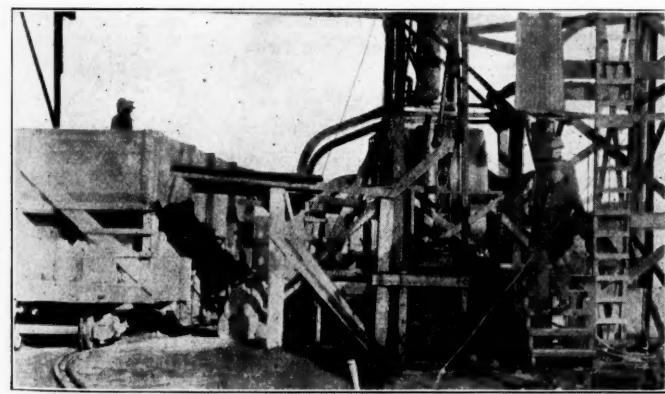
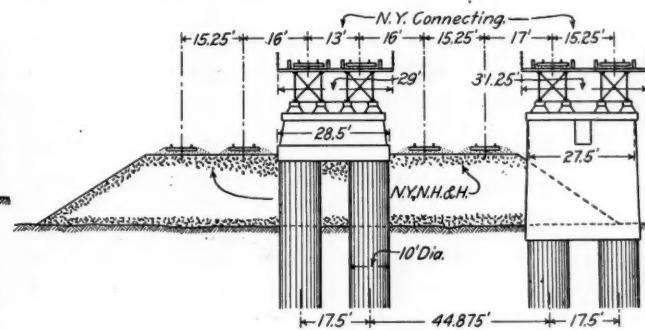
Cross Sections of Roadway Near Connection of New Haven and New York Connecting Railroad in the Bronx

abutments at street crossings, which are necessary to carry the additional tracks, are founded on spread footings supported by piles. About 900 ft. of retaining wall was required for this work, the fill between the walls being furnished by the New Haven.

From 138th street to 132nd street, where the difference in elevation between the new tracks and the old is too great to allow the use of the retaining walls and earth embankment, rectangular concrete piers are used under each of the two double-track portions of the line. Each pier is supported on two cylindrical columns, 10 ft. to 13 ft. in diameter, extending up to the ground level. These piers are placed about 64 ft. apart, the superstructure consisting of two lines of deck plate

handling the sections of the steel forms and other material required around the work.

The Bronx Kill bridge consists of two 175-ft. through truss spans designed for a double-leaf bascule bridge, but built temporarily as fixed spans. While this channel is not navigable at present an improvement is contemplated which will deepen it in order to relieve the severe tidal current in Hell Gate. The center pier and the tower spans at each end for the operating machinery of the proposed bascule bridge are of concrete with granite facing at the water level. The center pier and the southerly abutment are founded on rock, which

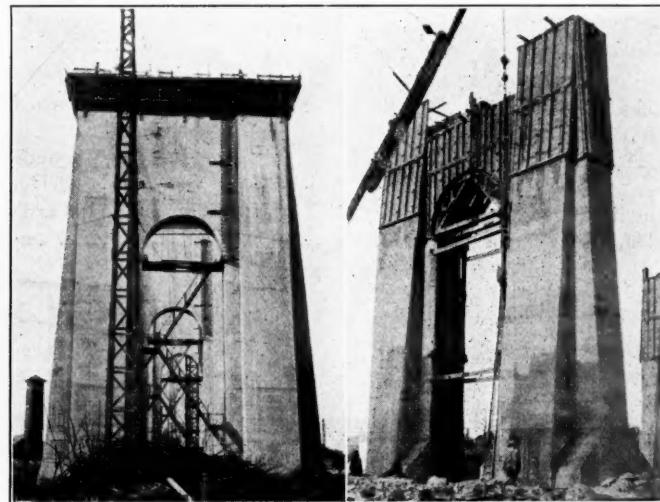


The Mixer Plant for Placing the Viaduct Piers

girders under each track. Between 133rd and 132nd streets the two new tracks, which are carried in the middle of the layout to that point, swing over the two easterly New Haven tracks, and join the other two Connecting tracks to form a four-track line, which is carried from that point to the Bronx Kill bridge on a viaduct consisting of deck girders on concrete piers. These piers, which have an arch opening at the base, rest on cylindrical concrete caissons at each end carried down to hardpan. Since the average pier height was less than 50 ft. it was found more economical for placing the concrete in these piers to use guyed derricks in preference to distributing towers, as the derricks could also be used for

dips rapidly to the north, necessitating spread footings under the northerly abutment.

The Randall's island viaduct consists of 24 deck plate girder spans, varying in length from 80 ft. to 87 ft., supported on concrete piers. These piers are founded on rock which was comparatively close to the surface on this island, and are designed with buttresses or pilasters at each end with an arch between. For the lower piers derricks supported on raised platforms were used for handling concrete into the forms on account of the economy effected in the handling of other material, as mentioned above. The contractor located a con-



One of the High Piers on Ward's Island

Arrangement of Forms for Building High Viaduct Piers

struction dock on Randall's island for handling the material used in the work.

The new line crosses Little Hell Gate at a sharp skew on a four-span steel structure consisting of inverted bowstring trusses. Two spans are 292 ft. 6 in. long each, and two spans 280 ft. 3 in. The water is very shallow in this channel, rock outcropping at frequent intervals. The three piers are skewed parallel to the channel and consist of two circular piers connected by a reinforced concrete arch. A granite facing is

provided at the water level. The foundations were built in open cofferdams, the excavated material and concrete being handled on a construction trestle across the stream.

The viaduct over Ward's island consists of 30 spans, varying in length from 86 ft. to 93 ft., the design being the same as that on Randall's island, except that the continually rising grade makes the piers from about 80 ft. to 120 ft. high. Practically all of these piers are founded on hardpan, although in a few cases the footings were located on rock. The contractor built a dock on the island with a storage capacity of 1,200 cu. yd. of stone and 600 cu. yd. of sand. Derricks were used to unload the materials from barges lying at the dock onto a belt conveyor, which transported them to covered storage bins. Cement was also handled in the same manner and chuted down to the cement house, adjacent to the storage bins. The bins were constructed at a height sufficient to permit of charging, cars being pushed under the bins and there filled with sand, stone and cement. Each of these charging cars carried sufficient material for about 12 cu. yd. of concrete. Two cars were used, one being loaded at the bins, while the other was discharging at the mixer plant. The concrete was mixed in one-yard Lakewood mixers, located at the base of high distributing towers, serving three piers on each side. The sand and stone were kept separate in the charging car, allowing the proper amounts to be drawn off with the least delay into the charging hopper of the mixer. The towers supporting the hoist and steel chutes were built of timber in interchangeable sections, which could be arranged to give any desired height. The maximum height required was about 224 ft. The form sections were handled by tackle attached to the guy lines supporting the concrete chutes.

HELL GATE ARCH BRIDGE

The crossing of the East river, even at its narrowest point in Hell Gate, was the most difficult problem in the construction of the entire line, its solution calling forth the design of a steel arch bridge with the longest span in the world. A single span structure over the river at this point was necessary on account of the depth of the water and the strength of the current, and for the same reason the structure had to be designed for erection without false work. A cantilever bridge, involving anchor spans at the ends, was not feasible on account of the 3 deg. 10 min curve over Ward's island, which commences approximately at the end of the bridge.

The structure is unusual in a number of respects, in addition to the length of span. The adoption of an arch bridge usually presupposes excellent foundations, but at the Ward's island end of the Hell Gate bridge the surface material and

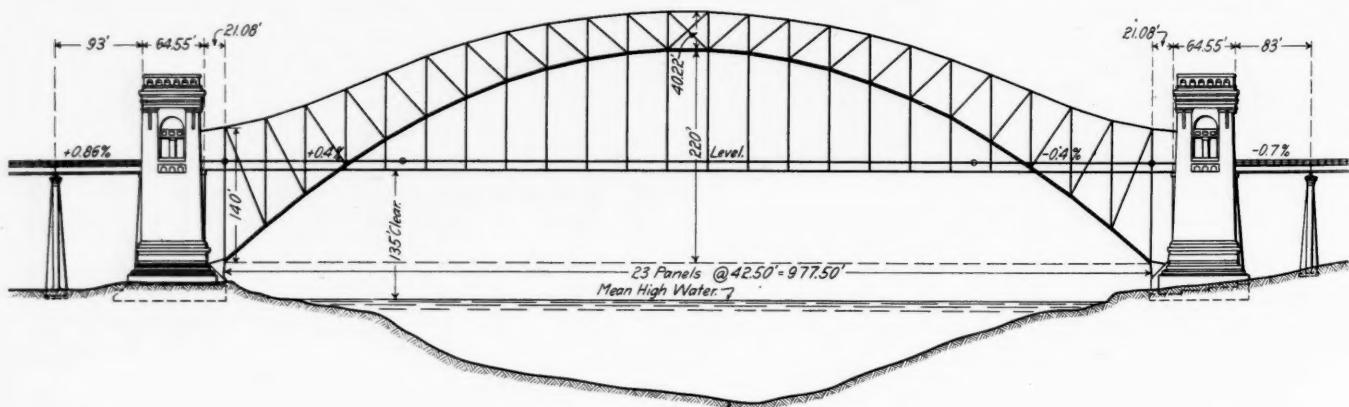
of the bridge. Other noteworthy points in design are the use of special rocker joints at splices between chord members, the specification of high carbon steel and large rivets, and the use of girders in the floor at the intersection of the roadway with the arches, to transmit the load from the stringers to the arches, due to braking trains.

The towers are 125 ft. by 140 ft. in area, and are of a hol-



The Construction Plant Used in Building the East Abutment of the Hell Gate Arch

low concrete construction, faced with Maine granite, above the ground, and extending to a height of about 220 ft. The roadway is carried through the arches of these abutment towers. In addition to their architectural value the weight of these



Elevation of the Hell Gate Arch Bridge

underlying strata were of such a poor quality that pneumatic caissons were used to support the tower. This is also the first long span bridge to be designed for four railway tracks. A loading practically equivalent to Cooper's E-60 was used in the design, the dead load amounting to 53,000 lb. per lineal foot

towers serves to decrease the size of foundation necessary and increase the stability of the arch structure. The two arches are spaced 60 ft., center to center, and each consists of two chords 140 ft. apart at the ends, and about 40 ft. at the crown. The rise in the lower chord is 220 ft. The roadway level is

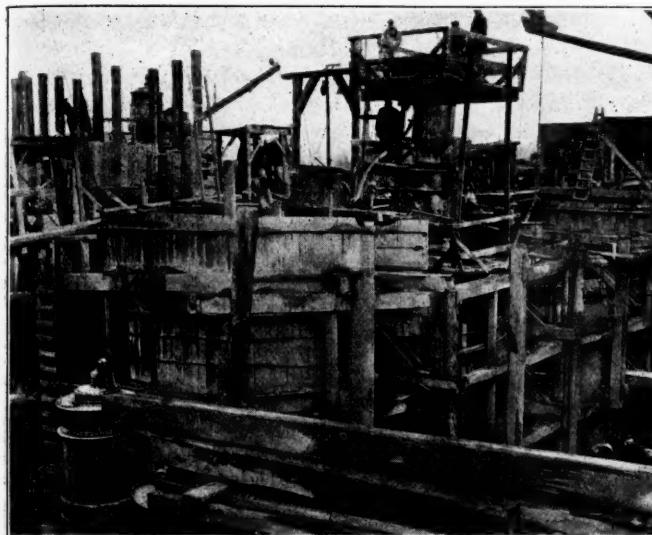
between the two chords at the end post, crossing the lower chord three panels out from the end, and being suspended more than 150 ft. below the crown of the arch in the middle of the span. The arches are two-hinged, although they will be erected as three-hinged, and maintained in that way until all dead load has been placed. The clearance above mean high water is 135 ft. On account of the enormous dead load the chord members are never in tension, and the sections required are unusually heavy. The lower chord is a box section with a middle diaphragm having a width of 6 ft. 6 in., and a maxi-

caissons would have to be sunk, it was decided to build this particular part of the tower with company forces under the direction of the engineering department. The plant consisted of five compressors, boilers, electric light, etc. Each circular caisson was provided with two shafts, and each rectangular caisson with three shafts, with separate material and men locks. The material was handled by four derricks and one hoist tower for concrete. The excavation was wasted behind the sea wall, built along the edge of the island. The sinking of the caissons was accomplished in seven months.

In the construction of the approaches to the arch bridge six piers are being omitted on each side to provide space for the back stays and counterweight, which will be necessary in the erection of the arches by the cantilever method. An important economy will be effected in this erection by utilizing for the back stays and counterweights a large portion of the steel designed for the superstructure of the arch and of the approach viaducts. It is expected that erection of the arch span will be commenced early in 1915.

HELL GATE TO SUNNYSIDE YARD

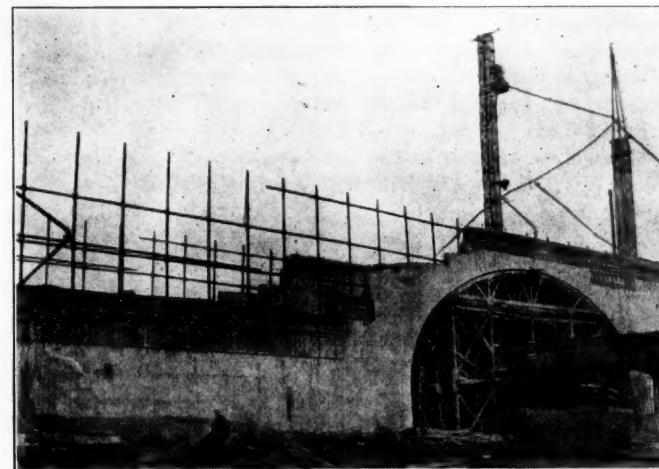
The Long Island viaduct is of the same type as that on Randall's and Ward's islands, the only difference in construction being that the piers are founded on gravel or sand, the footings being carried to a depth of from 10 to 30 ft. The rock was at too great a depth along this section to be reached by these footings, and this fact was an important consideration in the adoption of the concrete pier and plate girder type of



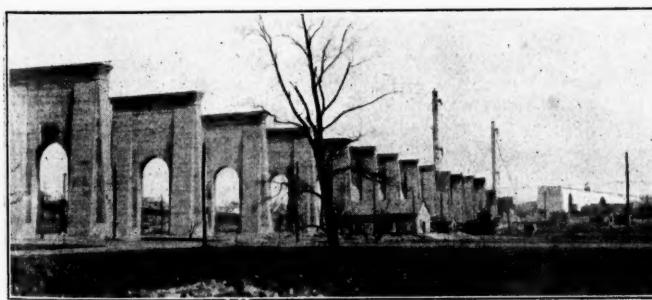
The Caissons in the West Abutment of the Hell Gate Arch

mum depth at the lower end of 10 ft. 6 in. The upper chord is an inverted U section, and is of course considerably lighter. Continuous ballasted tracks are carried across the structure on concrete slabs, this construction being standard over the entire elevated portion of the line.

The tower on the Long Island side is founded on rock at a depth of about 20 ft., the foundation being placed in open cut. The westerly tower, however, is founded on rock at depths varying from 58 ft. to 120 ft. below the ground surface. Twenty-one pneumatic concrete caissons were used in the construction



One of the Street Arches in the Eastern Viaduct Showing Also Thin Retaining Wall Construction



A Portion of the Long Island Viaduct Showing Concrete Towers Used in its Construction, Eastern Viaduct in the Background

of the foundation. These caissons were arranged in five groups, extending across the tower area parallel to the line of the arches. Three of these groups consisted of five 18-ft. cylinders each, and the other two, located in the vertical planes passing through the arch ribs, consisted of three rectangular caissons, 30 ft. by 40 ft. in plan under each arch. The three caissons under each truss are interlocked by keys, extending from the top to within 10 ft. of the cutting edges. The material through which these caissons were driven consisted of sand, coarse gravel and boulders, some of the latter being very large in size. On account of the difficulty which was expected in handling this material, and the uncertainty of the exact depth to which the

structure for all viaducts. As the bearing pressure could not exceed three tons per square foot on the gravel and sand under the Long Island approach, it was impossible to secure at a reasonable cost suitable foundations for concrete arches or other heavier types of construction. The footings of the concrete piers were necessarily made wide to secure the required bearing, and this is even more important, as the strata in which the footings are located are water bearing and are above tide level, although with the future development of this district they may be completely drained.

The Eastern viaduct, which extends from Lawrence street to Stemler street, adjoining the Long Island viaduct on the east, consists of thin, high concrete retaining walls heavily reinforced, with an earth fill placed in thin, convex, well-compacted layers. Some streets are crossed by reinforced concrete arches, others by deck truss bridges of from 120 ft. to 166 ft. span. The retaining walls reach a maximum height of 72 ft. and are spaced 57 ft. 6 in., back to back. The outer face of the walls is battered 1 to 40, and the back is plumb. The thickness of the wall under the coping is 3 ft. They are reinforced with 8 in. 16-lb. channels, spaced 10 ft. apart, vertically and hori-

zontally, and bolted together at the intersections. Tie rods are provided to connect the two side walls at each point of intersection of the reinforcing channels. Short pieces of these rods were attached to the reinforcement before the concrete was poured, and turnbuckles are used to connect these short ends with the 2½-in. rods, extending through the fill, which are being placed as the filling progresses. Solid concrete cross walls, which also contain tie rods, are provided at intervals of about 70 ft. Provision is made to carry the drainage down the backs of the walls and through holes near the surface. The filling material for this section of the work is being secured from the Sunnyside yard, the estimated quantity being 180,000 cu. yd. The fill is made with narrow gage equipment from a track laid on timber trestles supported on the tops of the walls, and is being carefully tamped in place in order to secure a fill that will exert practically no lateral pressure on the retaining walls. The design of these walls presupposes a fill of this character, the walls serving rather as facing for the fill than as actual retaining walls.

The reinforced concrete arches over the streets are all built on a skew, the maximum being 57 deg. In one case an elevated railway structure is carried under the arch, the span in this case being 102 ft. In two cases three-centered arches were used where a flatter ring was desired. The arch rings are heavily reinforced with 1-in. rods and wire mesh, the lower face of the arch is bush-hammered, and the upper surface is waterproofed by the membrane method, with a protective layer of brick laid over the waterproofing. High distributing towers were used in placing the concrete on this section, the concrete material being hauled in motor trucks from a dock on the river, about two miles away.

The section between Stemler street and the Sunnyside yard involves no work of unusual nature or of great size. The streets are crossed by concrete arches, or plate girder spans, and the tracks are carried on earth embankments without retaining walls between the streets. The material used for these embankments was secured from the Sunnyside yard, the total fill amounting to about 500,000 yd.

The masonry and foundation work was contracted to three firms as follows, beginning at the south end: Arthur McMullen, New York City; the Patrick Ryan Construction Company, New York City, and the T. A. Gillespie Company, New York City. The Snare & Triest Company, New York City, is building the towers of the Hell Gate bridge above the bases. The American Bridge Company has the contract for fabricating and erecting the superstructure of the arch bridge, the Long Island viaduct and the Ward's island viaduct, and the McClintic-Marshall Construction Company is fabricating and erecting the remainder of the steel superstructure.

In addition to Mr. Lindenthal, we are indebted to O. H. Ammann, assistant chief engineer, and H. W. Hudson, construction engineer, of the New York Connecting, for the foregoing information.

CAR LIGHTING IN INDIA—It is reported that the Railway Board of India has decided to install electric lights on all the passenger cars of the lines operated by the state. This official announcement will also mean that other lines eventually will have to do the same.

NEW RAILWAY IN COREA OPENED.—A British consular report states that the entire Keigen (Seoul-Gensan) line was thrown open to traffic on August 16 last, on the completion of the Seoul-Kozan section, 17 miles in length. The railway has a total length of about 138 miles, and it traverses the provinces of Kyeng-Ki, Kang-Won, and South Hamgyeng. There are 22 intermediate stations, and through trains from Seoul accomplish the journey in about eight hours. Gensan occupies the third place in the foreign trade among the open seaports of Corea, and is the chief port on the east coast.

INDUSTRIAL RAILWAYS CASE*

The following is an abstract of the commission's supplemental report given by Commissioner Clark in the Industrial Railways Case, dealing with allowances to short lines of railroad serving industries, the language of the commission being preserved in so far as possible:

This proceeding is an investigation instituted by the commission on its own motion. The original report, held that all allowances to, or divisions of rates with, any of the so-called industrial roads were unlawful. No distinction was made between the industrial roads, although their physical characteristics and the conditions surrounding them varied widely.

As a result of that report, although no order was entered, the line-haul carriers promptly withdrew all allowances, divisions and demurrage and per diem arrangements with the industrial roads in the proceeding, and also with other similar roads. Protests against such cancellations led the commission to suspend them in a number of instances. In so far as the industrial roads that were before the commission are concerned no such allowances, divisions or demurrage or per diem arrangements are in effect.

After our original report was issued, the Supreme Court handed down its decision in the Tap Line cases, 234 U. S., 1.

In its opinion the Supreme Court referred to decisions of the commission, such as the *General Electric Company* and *Solvay Process Company cases*, 41 I. C. C., 237 and 246, and said:

It thus becomes apparent that the real question in these cases is the true character of the roads here involved. Are they plant facilities merely or common carriers with rights and obligations as such?

It is insisted that these roads are not carriers because the most of their traffic is in their own logs and lumber and that only a small part of the traffic carried is the property of others. But this conclusion loses sight of the principle that the extent to which a railroad is in fact used does not determine the fact whether it is or is not a common carrier. It is the right of the public to use the road's facilities and to demand service of it rather than the extent of its business which is the real criterion determinative of its character.

The court said that it was doubtless true that abuses existed in the conduct and practices of these lines and in their dealings with other carriers, which resulted in unfair advantages to some tap lines and discrimination against others. It pointed out that because the conclusion was reached that the tap lines were common carriers of both proprietary and nonproprietary traffic, and therefore entitled to participate in joint rates with other common carriers, it did not follow that divisions of joint rates might be made with them at the will of the carriers and without power of the commission to control the same.

In fundamental principles the instant case does not differ from the Tap Line cases. There may be a distinction as to the application of the commodities clause, but that can not properly affect the conclusions or action of the commission. If the commodities clause is violated, that infraction of law is not to be corrected or punished by rate adjustment.

Our findings in the original report in the instant case have been given general and substantial effect by the trunk line roads. The withdrawal of allowances to many of these industrial roads seems to have been accepted as proper without much question, but as to a few of them there is insistence that our findings invade the legal rights of the so-called industrial roads, and we are urged to issue an order so that those questions may be tested in the courts. We have concluded, however, that it is our duty to refrain from issuing an order and to avoid the delay which would be attendant upon such litigation. We think that in the light of the decision of the Supreme Court in the *Tap Line cases* it is our duty to so modify our findings in the original report herein as to permit the trunk line roads, if they so elect, to arrange by agreement with any of the industrial roads mentioned in our former report which are common carriers under the test

*The original decision (29 I. C. C. 212) was abstracted in the *Railway Age Gazette* of January 30, 1914, page 233.

applied by the Supreme Court in the *Tap Line cases*, and which perform a service of transportation, for a reasonable compensation for such service in the form of switching charges or divisions of joint through rates. Each road that becomes party to such an agreement must file with us immediately upon the consummation thereof a full statement of the arrangement entered into showing specifically the allowances or divisions granted thereby. We shall, in the exercise of the duty pointed out by the Supreme Court, undertake at the earliest available opportunity to inquire carefully into any of these allowances or divisions which may seem to be unwarranted or unreasonable or to effect unjust discrimination. What we have here said relative to establishment of allowances or divisions with the industrial roads referred to is not to be understood as a finding by us that those industrial roads can resume these relations with the trunk line carriers without transgressing the provisions of the commodities clause. If infractions of that law come to our notice, we shall in the proper way bring them to the attention of the Department of Justice.

We shall expect the trunk line roads, under the modification here made of our original findings, to re-establish allowances, divisions, or demurrage or per diem arrangements with industrial roads only in instances in which the transaction is *bona fide*, and in which it is clearly lawful and proper. Each case must be judged by its own facts and merits. Each of the industrial railways is or is not a common carrier. If it is a common carrier, it is entitled to all the rights and subject to all of the limitations provided in the act.

Commission Harlan in a dissenting opinion says:

In the original report we condemned the allowances and the advantages enjoyed by the industries in question in the elimination of demurrage and in the benefit of reclaims; we also condemned the furnace allowances and the free services, and held upon the fact before us that in each of the cases dealt with in the report the industrial railway was a part of the plant facilities of the industry and performed no service of transportation. Subsequently petitions for rehearing were filed by several of the parties in interest, which after due consideration were overruled. Although no order was entered the carriers later filed tariffs to give effect to our findings and conclusions. The results have been accepted and recognized as proper by nearly all of the industries operating plant railroads under conditions that made the general principles of the original report applicable also to them. More recently, however, several of the larger industrial lines, as well as some shippers served by them, have expressed a desire that an order might be entered so as to give them an opportunity, by application to the courts, to test the legality of our findings.

In my judgment an order should be entered on the basis of the original report so that the matter can be taken into court, and some definite principle established by which we may be guided in the disposition of the many similar cases now pending before us and that may hereafter arise. The propriety of so burdening the revenues of the trunk lines is not only a matter of importance to the trunk lines themselves, but to the general shipping public by which all such burdens must ultimately be borne. It is important also that other industries not receiving these benefits and privileges at the hands of the trunk lines should know what their rights are; and it is most important that this commission, in its administration of the law, should know the views of the court of last resort on these great questions. The majority report, however, while modifying the original report, establishes no rule for the future guidance either of the carriers, or of the industries, or of ourselves with respect to any of the questions involved. The facts are all before us. Before the hearings were undertaken the examiners of the commission spent some months in the field making investigations, and many days were subsequently given to the hearing of testimony at different points. The record so made consists of some thousands of pages of testimony and hundreds of exhibits. With the entire situation before us the original report undertook to deter-

mine whether any of these industrial lines were performing a service of transportation as a common carrier. The supplemental report closes with the statement that each of these industrial railways "is or is not a common carrier. If it is a common carrier it is entitled to all the rights and subject to all the limitations provided in the act."

This statement is coupled with an expression of the expectation of the commission that the carriers will re-establish allowances "only in instances in which the transaction is *bona fide* and in which it is clearly lawful and proper." The line carriers are not required, but are permitted, if they so elect, to re-establish allowances with any of the industrial roads mentioned in the original report "which are common carriers . . . and which perform a service of transportation." A statement of any arrangement so entered into by a line carrier with any such industrial road must be filed with the commission which undertakes at the earliest opportunity to inquire whether the allowance is "unwarranted or unreasonable or effects unjust discrimination." This was precisely the object of the whole investigation, and so far as I can see we are thus brought back by the supplemental report practically to the point where we started nearly four years ago. (32 I. C. C., 129.)

RAILWAY AFFAIRS IN OTHER COUNTRIES

The Railway News of London has compiled figures showing the number of railway employees of great Britain that have enlisted for the war, a total of over 35,000 for eleven companies. Allowing for the figures of other companies not yet published, the total must be at least 40,000 for the United Kingdom. The North Eastern men were formed into a special battalion. This company's contribution of 5,000 represents about one-tenth of the company's force. The figures for the principal companies are as follows:

Great Central	1,300	London Brighton	1,300
Great Eastern	1,500	Midland	3,000
Great Northern	2,500	North-Eastern	5,000
Great Western	7,600	S.-Eastern & Chatham	1,500
London & N.-Western.....	9,400	Tube Lines	150
London & S.-Western.....	2,000		
		Total	35,250

* * *

Since the declaration of war on Germany by Great Britain early in August, completely equipped ambulance trains have been prepared by a number of the railroads of Great Britain and turned over to the war office for use in transporting wounded soldiers from the coast to hospitals at various inland points. These trains were made up of existing rolling stock, the interior of which was altered and refitted in accordance with plans approved by the war office; the work of conversion was conducted with such despatch that some of the trains were ready for service by August 14. Each train is made up of from nine to ten vestibule coaches and in effect constitutes a completely equipped hospital capable of caring for about 100 wounded men, together with accommodations for the necessary staff of doctors, nurses and orderlies. Each ward car will accommodate from 16 to 20 men on spring cots, which are arranged in two tiers on either side of the car. A treatment car is provided, one end of which contains a well equipped pharmacy. Next to the pharmacy is an operating room opening from a side corridor, in the fitting of which special care has been taken to provide for proper sanitation. A third compartment is fitted up as an office, and the remainder of the car is arranged for the storage of clean and dirty linen. The trains all include dining or kitchen cars, and ample mess room and sleeping accommodations for the entire staff. Everything possible has been done to promote comfort and convenience, some of the trains having telephone installations for communication between the various cars.

SOMALILAND RAILWAY SHELD.—A German cruiser is reported to have bombarded and destroyed part of the railroad, which is being built by a French company, between Jibuti and Addis Abeba, Somaliland.

THE PROGRESS OF PUBLIC ENLIGHTENMENT

BY FRANK W. NOXON

Secretary, Railway Business Association

Some manufacturers and wholesalers have been surprised to find commercial travelers' organizations to which their salesmen belong circulating protests against the advance in price of mileage books, when the concerns themselves had gone on record as favoring larger income for the roads. They find that a representative may not know the policy of the company unless he is directly informed of it. The executive of a very large enterprise sometimes sniffs at the heads of smaller institutions for obstinately clinging to the anti-railroad habit in conversation and thus tending to restrain the restoration of general prosperity by continually stirring up political antagonism; yet this same manufacturer may have in his employ numerous men with whose line of conversation he does not make himself familiar, and men, too, of stature equal to that of the small shipper criticized and of equal or greater influence in their neighborhoods and among other business men. Some concerns in the United States employ as many as 500 or more salesmen each. Not only is there danger of serious damage, but a great opportunity is lost, when an institution sends men over the country without placing in their hands facts about questions upon which public opinion must be set right if anybody is to sell goods at all.

An Interstate Commerce Commissioner, since retired, confided to a visitor soon after the denial of rate advances in 1911 that the railroads would never obtain an increase in freights until public opinion should be in favor of it. "I don't mean shippers," he added. "I mean the general public." Some of those directly responsible for railway prosperity or deeply interested in it exerted themselves accordingly in the months following. An interesting account could be made of the gradual enlargement of horizon as the gospel was carried to wider and wider circles.

Heads of large shipping enterprises in the principal cities were the first inner circle. Generally they had not stood up to be counted for the advance in 1910. They desired it granted, but felt that much harm had been done by controversial attacks upon the railroads in connection with rates and that organized advocacy of advances might evoke a renewal of such assaults. They believed, too, that the advance would almost certainly be sanctioned. They therefore refrained from public approval. Traffic commissioners of bureaus and of individual concerns were permitted to participate in the hearings, to present statistics and arguments in rebuttal and to cross-examine the railway witnesses. Their surprise at the failure of the advance was unmistakably genuine.

By these executives of large institutions, therefore, after 1911 a more public acquiescence in rate advances was made. The result was that practically all the larger shippers went on record and before the end of 1912 many thousands of others had followed their example. Where industrial traffic commissioners gathered in their organizations there was a sudden and marked absence of anti-rate advance conversation. It was the abstention of these men from entering appearances before the commission in 1913 in connection with the 5 per cent advance case that is understood to have led to the retention of Mr. Brandeis by the commission to present "the other side."

The next wider circle was the shippers in the smaller cities and towns. Railway officials visited towns throughout the territory for exchange of views face to face with shippers. Business men particularly earnest in advocacy of higher rates laid the reasons systematically before fellow members of local and trade organizations. One analysis of the result was given by a magazine, the Railway World, which asked secretaries of business organizations throughout the eastern territory what their communities thought about the advance. Out of 261 commercial organizations heard from, only 11 were unfavorable. Of the others, 127 were undecided and 123 actually favorable. The most significant feature was the much more numerous bodies not sufficiently wrought up against advances to reply at all. The

compiler, however, states that "those taking a negative position belong more largely to smaller communities."

Here then in the smaller communities was a circle not yet fully reached; and the business men who had communicated their policy to the traffic commissioners find in 1914 that their salesmen, talking weekly with scores of tradesmen and others, have been so little solidified as a craft that the officials of salesmen's mutual benefit associations see no reason for not starting a propaganda against the very increase in income which manufacturers and merchants have advocated and the Interstate Commerce Commission sanctioned.

Transportation questions are more promptly discussed and understood in large cities. By sheer force of numbers organizations can be supported there without a heavy tax upon any individual, and bureaus maintained to study and report upon such problems. The business man in the large city, too, comes into direct relation with the railway officials at headquarters, who speak with authority upon matters of policy and show forth at first hand whatever spirit of conciliation and accommodation may animate the management. Business men located in the smaller cities and meeting railway representatives a good way down the line do not absorb a situation as quickly or as clearly.

Every manufacturer, merchant or railway manager has his own organization—the men whose livelihood depends upon the same economic and governmental factors as his own. Every man lives somewhere, and in that place, wherever it is, there is a business organization and a press. Nearly every business man is a member of a trade which is organized on national or regional lines and has its journals. Every man may have in addition acquaintances influential for this, that or the other reason. It is the conscientious and systematic effort to share with all these people whatever knowledge may be had about any important public question affecting business that is enlisting the energy of more and more men of affairs.

One merchant, employing several hundred salesmen, sends them periodically information upon issues related to prosperity and instructs them to report daily what they hear on these subjects. One large organization encourages its leading officials in the acceptance of invitations to write articles or deliver addresses. The themes are the subject of company conference, while the resources of the concern are put in behind to push dissemination.

Men who up to a short time ago paid their dues in the board of trade and let others "not so busy" frame the policy and do the work now take the time for personal participation. The same is true in trade and other national bodies.

Presidents of companies often have nowadays a special list of concerns with which they do business or with whose officers they are personally acquainted and from time to time send such concerns literature, originating on the premises or elsewhere, and accompanied by a letter requesting perusal. This work is made a part of the business, and some one is made responsible for carrying it out.

Each man may cover his circle as far toward the circumference as he can. A great deal of the time it is not a simple operation of A driving something into B's head. The matter with B may turn out to be gray matter. He may have a different point of view which A needs to understand. Too much talking has been done in America standing up facing a crowd; not enough sitting around a committee table and giving dignity to what shall be said by conferring about it. Hiring a ready writer with instructions to prepare anonymous material and "put it across" is a fossil of the next age back but one. If the business man expects to exchange views with other business men and with the general public he must do it himself.

THE CHILEAN LONGITUDINAL RAILWAY.—The Minister of Public Works, of Chile, is reported to have formulated a contract subject to further approval, with the Howard Syndicate, whereby the latter will undertake the exploitation of the Longitudinal Railway for a period of 30 years.

The Arguments of Mr. Brandeis and Mr. Brownell

Special Counsel for the Commission Seeks to Narrow the Issue; the Vice-President of the Erie's Answer

The following is the final argument of the special counsel representing the Interstate Commerce Commission in the rehearing in the rate advance case:

ARGUMENT OF LOUIS D. BRANDEIS

The course which the evidence and the arguments took in this case indicates that, in the opinion of other counsel, the issues and the powers of the commission are much broader than I conceive them to be. I had supposed, from the form in which the order was entered, that the question before the commission was whether, in view of the new evidence to be introduced, which was strictly limited to "presentation of facts disclosed and occurrences originating subsequently to the date upon which the record previously made in these cases were closed," such new evidence constituted a reason why the conclusions reached by the commission should be modified.

But counsel have argued not alone or mainly that certain alleged new evidence afforded a reason for changing the opinion, but that, upon the evidence which the commission had before it originally the conclusion then reached was incorrect. That was particularly the burden of Mr. Butterfield's objections to the finding in respect to the coal rates. Although in my opinion such considerations are not properly before your Honors, I think I ought to say a few words on that subject because, inadvertently, no doubt, Mr. Butterfield has misstated what I conceive to be the situation.

He said, many times, that the commission gave no reason for its finding in regard to coal rates except that larger cars were used, involving, presumably, less expense. That is not correct. Your Honors will find, on page 392 of the opinion, that attention is called specifically also to this fact:

"While the heavier train loading of the slow trains in which the heavy or bulk freight usually moves has tended to decrease cost."

Your Honors will also remember that in the evidence the cost of fast freight, as distinguished from slow freight, was very particularly referred to, and among other things there was introduced the schedule, being the estimate prepared by the Baltimore & Ohio Railroad, showing that "if 25 per cent of the present fast freight trains were continued for the purpose of handling stock and perishable fruit on present schedule, and the schedules of the remaining 75 per cent of the fast freight trains were lengthened only 24 hours, the saving to that system, conservatively estimated, would be over \$400,000."

Now, it was the fact not so much of large cars, but the fact of the heavy trains and that they were slow trains, which was particularly dwelt on as the reason why coal stood in a different position from much other freight.

And that evidence was supplemented by much general evidence, which your Honors referred to on pages 392-3 of the opinion, of a more comprehensive nature. There was shown, the financial condition of those railroads known as coal roads; and the railroads selected for this purpose were not the anthracite coal roads, with which we are not concerned in this proceeding, but the coal roads in Official Classification and, in part, in Central Freight Association territories. Those coal roads were selected, and the particularly prosperous condition of those roads as compared with other roads was pointed out; and a comparison was made by your Honors between the coal subsidiaries of the New York Central and the Pennsylvania. In addition to this your Honors had before you specific testimony as to the cost of moving coal

which also showed that the coal traffic was particularly profitable.

That discussion, it seems to me, was one marked example of a tendency to disregard the terms of the order under which this case has been reopened, and to have involved practically a reargument of the original case on the original evidence, instead of confining the hearing to a discussion of the effect of the new evidence.

Now, what are the conclusions which this commission reached and which it is now sought to modify? In the first place, take the Central Freight Association territory. The first proposition was a denial of an increase of the rates on coal and other heavy or bulky articles. There has not been introduced, as I see it, a particle of evidence bearing specifically upon the correctness of that finding. There is no contention that any of the elements entering into cost of operation are higher in price today than it was prior to the date of the decision. Mr. Rea testified he knew of no increase in the rate of wages, or any increase in the price of materials or supplies, or any new governmental regulations imposing additional burdens. There is, of course, evidence bearing upon the general question as to the railroad needs, to which I will call attention later.

Then the next ruling in respect to Central Freight Association territory was that all tariffs bearing a minimum of five cents a ton on commodities moving under rates stated in cents per ton less than one dollar should be cancelled, because, as the commission found, "this would work hardship and discrimination."

Of course there has been no evidence bearing specifically upon that issue or showing that hardship or discrimination therein referred to would not result.

The third finding was that tariffs involving "increases exceeding five per cent by varying amounts" be cancelled because the carriers "failed to justify such variations from the five per cent rate." I have found no evidence bearing specifically on that issue.

The fourth finding was that certain rates controlled by force of unexpired orders of the commission, entered after specific investigation in former cases, be cancelled because carriers failed to introduce any evidence why they should be raised. There has not, so far as I know, been any evidence introduced specifically upon that issue.

There remains, then, only the question, so far as the Central Freight Association territory is concerned, as to whether the great need of the carriers, as to which much evidence has been presented, presents a new fact which should lead to a modification of the findings above referred to in regard to Central Freight Association territory; your Honors found not only what you had found generally in respect to the Official Classification territory, taken as a whole, that the income was less than was demanded in the interest of the public as well as of the railroads, but you found, by very specific statements and a very specific exhibit of facts, that the Central Freight Association lines were greatly in need of additional revenue, and of revenue more, as I read the opinion, than could be hoped to be gained by an increase of five per cent in all freight rates.

The facts which have been exhibited in the complete reports for the year 1914 add practically nothing to the evidence before the commission. Taking the territory as a whole, I mean the whole Official Classification territory, the figures show just about the same reduction in net revenues as had been estimated on the eleven-months basis as to which the commission had the figures

before it. You had, for the whole territory, as I recall it, \$68,000,000 fall in net revenue, in eleven months. The exhibit now filed shows the drop to be \$76,000,000 in twelve months, which amounts to about the same. Indeed the last month as to which the commission had the figures (May) showed over \$8,000,000 fall in net revenue. If that same rate had been assumed by the commission for the month of June, it would have given for the year just the amount which is found now upon the final figures, to have been the reduction in the net revenue. So that the commission has before it in that respect now, substantially what it assumed were the facts at the time of the writing of the opinion. There remains, of course, the question of the effect of the war upon credit and upon interest rates, to which I will refer later.

So much for the Central Freight Association territory.

Now as to the Trunk Line and New England territories, the commission found that the carriers had failed to show either that the existing rates in Trunk Line or New England territories "are too low, or that the increased rates proposed for those territories were just and reasonable."

Again, no specific testimony or evidence of any kind has been introduced as bearing upon this issue. There has been nothing introduced except the general testimony as to the needs of the railroads.

Then the commission found the tariffs which increased interterritorial rates between the different sections of Official Classification territory should be cancelled "because the carriers failed to prove that the existing inter-territorial rates in Official Classification territory are too low, or that the proposed increases in those rates would be just and reasonable."

Here, again, we are without any specific testimony bearing upon the finding.

As to the lake and rail rates, your Honors found that the tariffs should be cancelled "because carriers have not met the burden of justifying the proposed increase of the lake and rail rates"; also, "because those increases must necessarily fall with the fall of the all-rail rates."

No evidence has been introduced bearing specifically on that subject except one exhibit, to which, undoubtedly, Mr. Butler will specifically refer.

We come, then, to a consideration of the general evidence as to the needs of the railroads and railroad credit. The evidence as to results of operations in the year 1914, I have already referred to. The showing for that year certainly confirms the conclusions that your Honors reached, that the incomes of the railroads, taken as a whole, are not such as are required in the interests of the public and the railroads. The specific evidence as to the period since June, 1914, does not indicate any greater expense of doing business, except in this respect: If the amount of the traffic grows less, and there is a smaller use of the plant, the capital cost per unit of transportation necessarily increases with the reduction of business. As to that, I will speak later. But the operating ratio does not necessarily increase; and in the current year, that is, since June 30, 1914, in spite of losing business, there has been a smaller operating ratio.

I call attention to the figures for July and August for the Eastern District. Taking the month of July, 1914, the figures for 58,585 miles of road show that the operating ratio was 70.05 per cent, as against 71.28 per cent in 1913 for 58,671 miles. In August, 1914, the operating ratio on 58,673 miles was 66.58 per cent, as against 69.72 per cent in 1913 on substantially the same mileage.

Now, Mr. Willard and Mr. Rea have both said that their decreased operating ratios did not properly represent decreased cost of operation, because a less charge had been made for maintenance of way and equipment; and that the expenditures of less for maintenance was practically deferring during those months a part of the cost of operation.

The figures submitted, and to which I referred in the cross-examination of Mr. Shriver, as contained in the Burnside Exhibit,

do show a lesser expenditure for maintenance of way and for maintenance of equipment in 1914 as against the corresponding month of 1913; but it also is clear that the other expenses of operation have become less, that is, the railroad managers have been able to reduce—doubtless through greater efficiency—those elements in cost which were not maintenance, and this is particularly large in the month of August, the latest for which we have the figures.

In these Eastern District roads, in the month of August, the operating revenues fell from \$124,000,000 to \$116,000,000; that is, there was a loss of over \$8,000,000 in operating revenues. The reduction in the amounts expended for maintenance was less by nearly \$3,000,000. But the figures show an actual increase in net revenue of \$614,000. It thus appears that with \$8,000,000 less gross revenue and under \$3,000,000 less expenditure for maintenance, the railroads have been able to earn more net revenue in that month, than they did in the preceding year; and this greater earning represents an improvement in operating efficiency in part of about somewhere in the neighborhood of \$5,000,000.

The showing for July is not as favorable, but it indicates the same tendency. This shows clearly that with a lessened business the managers, or those who are operating these railroads, have been able to reduce expenses other than maintenance. The reduction of those other expenses was a pure gain to the road and not a deferring of expenses.

It is true, however, that while with the diminishing business, the operating costs have been reduced, the fact that the business has diminished in volume has increased the capital cost per unit, and certainly is considerable evidence that at least up to the present time that reduction is in large part the result of the war. That raises the question whether a reduction of traffic which adds to the unit capital cost which by failure to utilize the plant to its full capacity (though it be temporary and may pass almost at any moment, or may continue for a long time), whether such lessening of traffic is an element to be considered in determining the reasonableness of rates. Of course, that is not a question as to which there is any evidence before the commission one way or the other, unless your Honors consider as evidence the opinions expressed by the various witnesses.

There is also evidence that the capital cost per unit has increased through an increase in the prevailing rate of interest due to the war; and there is evidence that this increase in the rate of interest may be expected to continue for some years at least. The question therefore arises: To what extent will that increase in the rate of interest increase the cost of doing the transportation business?

There was evidence tending to show that there would be in this present year—within 12 months or 15 months, certainly—\$500,000,000 of obligations which would have to be issued, for renewals and new money and that on those obligations there would, presumably, be some increase in the rate of interest. Some of those obligations are bearing rates of interest which are very high now, and the rate would probably be a good deal less if long-time obligations were substituted for short-term notes; but there is evidence that the rate of interest will, owing to the war, be higher than it has been recently. If, in all, the amount of money required for funding and other purposes amounted to as much as \$500,000,000 in a year, and the rate of interest becomes one per cent higher than it otherwise would have been, that would mean \$5,000,000 added to the year's burden, and that \$5,000,000 would reasonably be spread over the whole revenues of the railroads, and the revenues of the railroads in Official Classification Territory, are, roughly, \$1,500,000,000. Of course, if that higher value continued for a series of years, each year's new issues would add to the railroads' burdens. That is, the burden would accumulate from year to year.

Aside from the element of increased capital cost due to an assumed continuation of these two causes, diminished traffic and increased rates of interest, it was urged most strongly

upon the commission that rates should be increased in order to maintain the credit of the railroads; and the new fact that was introduced in this respect, was the war. The facts in regard to the war, except so far as they might result in reduced traffic and an added burden, do not affect the question of credit in itself; but there was much evidence, particularly from the bankers, that the alleged impaired credit of the railroads would become a very serious factor, by reason of the war; that is, that those abroad who hold securities would, if rates were not raised, have an added incentive to sell them. It was further argued that if they did sell, did dump their securities on this market, it would have a very disastrous effect not only on the railroads, but on our financial institutions and on business generally.

Now, it has seemed to me that those considerations led us quite far beyond the powers of this commission, that they had in no proper sense a bearing on what are just and reasonable rates, but very properly a bearing upon what might be the national financial and economic policy, which another branch of the government is called upon to deal with.

There was introduced considerable evidence concerning the additional revenue which might be expected to accrue within a reasonably short time from following the suggestions made by the commission as to other sources of revenue.

I am not clear as to the purpose of the carrier in introducing that testimony. This proceeding began as an inquiry whether the railroads had adequate revenues, and if not, what course they might pursue to meet the situation. It was only four months later that the railroads filed their tariffs, after which the two proceedings were consolidated. Now, as to the first proceeding, the inquiry as to the adequacy of the revenues and as to the possible means "of meeting the situation," if revenues were found to be inadequate: In that proceeding the commission made no formal order. It merely made certain suggestions. There is no application to modify those suggestions; and it is difficult to see how such a request could have been made. That proceeding has not been closed. I am inclined to think, therefore, that the purpose of introducing the estimates of additional revenues to be expected was introduced as tending to show that, in spite of the following suggestions, the railroads could not expect to get, in the immediate future, relief sufficient to satisfy their great needs. If those words "immediate future" are strictly defined, there is perhaps no need of challenging the accuracy of the estimates. But it is clear that, if any other meaning is to be given to them, the probabilities of greater value have not been fully stated.

Take, for instance, the situation in regard to passenger rates. Mr. Butterfield gave as his estimate of passenger increases \$3,000,000. The passenger train revenues last year were \$302,000,000 in Official Classification territory, of which \$200,000,000 were in Trunk Line territory and in New England territory, wherein there is practically no legislative limit to passenger rates. If, as the commission found and set forth in considerable detail in its opinion, these passenger rates are unremunerative—not only unremunerative in that they fail to pay a reasonable return upon the capital, but in some instances, to cause an actual loss in operating costs—there would appear to be no good reason why those rates should not be largely increased, as, in fact, they have been in some communities. They have as to the mileage rates quite generally. That rate has been increased 12½ per cent already, and in some territories—certainly in the New England territory—there have been a great many individual passenger rate increases.

In Central Freight Association territory, there is in most of the states the obstacle of two-cent fare laws; and that brings up also properly the question which Mr. Patterson raised in regard to the mail pay. What is to be the position of this commission if it is to determine the reasonableness of rates according to the financial needs of the carriers, and

those needs result from what would appear to be erroneous or unjust action on the part of some other bodies which regulate rates of pay for railroad services? If it be true, as the evidence indicates, that those two-cent fare laws in Central Freight Association territory take out of the railroads a very large amount of money, and if it be true, as is contended, that the Ohio law affecting freight is depriving the carriers of a great deal of money, and if it be true that the State commissions by their rulings are depriving the carriers of a great deal of money, and if it be true that the federal government is withholding from them a great deal of money by reason of inadequate mail pay; if it be true that by reason of these various amounts withheld, or which the railroads are denied the opportunity of earning, the railroads are in need of additional revenues, can this commission say that the existence of such need makes increases of interstate rates reasonable because it is necessary to bring up the net revenue to the point of an adequate return on the investment. And in another way—of course, in an entirely different way—the same question is presented in the consideration of other causes of inadequacy of revenue. If, for instance, inadequacy of revenue was due to past mismanagement, to grave defects in capitalization or similar causes, can it be true, as Mr. Minnis contended, that your Honors must allow increases because of existing need, regardless of how that need arose; and that it is immaterial whether that need arose from mismanagement, or bad judgment, or a war, or through the erroneous decision of some other co-ordinate tribunal? Does mere need force the decision of your Honors so as to compel a finding that rates are just and reasonable, because only with such increases can the necessary amount of money be raised? It seems to me that that question is directly raised by the evidence which Mr. Maxwell and Mr. Shriver introduced in connection with what the Illinois and Indiana commissions have done in the way of holding up the increases which were proposed.

Of course, if your Honors have occasion to consider at all the estimates of increased revenue to be derived from following the different lines of suggestion made by the commission, your Honors will bear in mind that, in very large part, those suggestions have not been acted upon, and have not been taken into consideration in making the estimates.

For instance, there was considerable testimony in the case and a good deal of discussion as to the heavy drain upon the revenues of the carriers by reason of the terminal services, or what are called free services or special services at terminals, and particularly in New York Harbor. That was discussed at very considerable length. In these estimates which are presented, that matter is not at all taken into consideration.

Then there were very many other different lines suggested by which there might be other savings of expenses. For instance, one was the private cars. Again, there was a possible increase of passenger revenue through the abolition of passes, and a good many other suggestions in the way of savings in operation.

Mr. Shriver stated, undoubtedly most correctly, that it would be extremely difficult to estimate, and that he had found it impossible, in the absence of one of his associates, to make any estimate of those savings. All that I want to do is to ask your Honors to bear that fact in mind, if your Honors should deem the amount of these estimates to be important.

Of course, it is also true that in regard to the proposed increases on certain commodities and in certain rates, that it by no means follows that the increases proposed are the only increases that should be made. It may be that the rates should be raised more; and that rates should be raised on many more articles of commerce on which rates are now unremunerative. Your Honors will bear in mind the testimony that a very short time has elapsed since the decision,

that it is a very big task to make the revision of these rates, that it will involve a great many conferences, and the carriers have not proceeded, certainly in many respects, very far.

There is one other matter bearing upon credit, or as to the causes of the lack of credit, which, perhaps, ought to be called to your Honor's attention. Credit may be impaired in many ways, and among the things that may happen is an exhaustion of credit. Your Honors found one element of exhaustion, one means by which credit might have been exhausted; that is by the use of the credit of the carrier for the acquisition of properties not used as a part of its system. There was the finding that in Official Classification territory there were \$684,000,000 of such properties held by these carriers. One of the suggestions made by your Honors was that these carriers consider the disposition of these properties. Of course, they could not be sold out under present conditions; but still the fact that they were bought was one of the factors in exhausting credit. It accounts in part for the fact to which attention was called by several of the witnesses, that the railroads in raising money must often raise it on junior securities or on bonds with stock as collateral, rather than by mortgage on the roads.

The following is the argument of George F. Brownell, vice-president of the Erie, in answer to Mr. Brandeis.

ARGUMENT OF GEORGE F. BROWNELL

I share the view expressed by Mr. Thorne that the railroads are now at a parting of the ways. Like him, I see them, in this case, where two ways diverge, with the commission at the switch. To my vision, one of those ways marks the continuance and extension of the public policy under which the railroads heretofore have had their remarkable development and progress—a public policy which has permitted and invited their construction, maintenance, and operation under private ownership and management with governmental regulation, and through capital secured from private investment. But the other way to which he asks you to divert the railroads would subject them and the public alike to serious dangers and difficulties, with the ultimate goal, which I believe is his desire, of government ownership.

I judged that from the substance of the views he has expressed here and what I have understood to be views publicly advocated by him; and that, at least, is what seems to me where the way he advocates would lead as its ultimate goal. In reply to those views I quote these words of Commissioner Daniels in this case:

"Eventually it may come about that railroads will be owned and operated by the government. That is a matter of public policy which it is not the province of the commission to consider. But that such a departure from the present policy of private ownership and corporate operation should be materially hastened by the reluctance of new capital to invest in these properties would seem to be a grave indictment of our present system of regulation and control."

In various other respects I cannot share the vision of my friend from Iowa. I cannot see the prosperity which he seems to think these railroads now revel in. I do not think that prosperity of that character has been seen before since Alice roamed with wondering eyes in Wonderland. . . . There seems to be a misconception on the part of some of the counsel for the opposition as to the scope of this rehearing. Mr. Brandeis, as I recall it, stated his understanding that the rehearing is strictly limited to the question whether the new evidence, limited strictly to the new facts, constitutes a reason why the former conclusions of the commission should be modified. . . . I think that his view would unduly restrict the scope and character of this rehearing.

Counsel for the opposition have also fallen into error with respect to the contentions of the carriers as to the power of the commission to do what is asked of them. We are not asking that the commission undertake to exercise any powers not con-

firmed upon them by law, but we assert that all the considerations which we have presented to the commission are proper for them to take into consideration in determining the question at issue. We think our views in that regard are amply supported by both reason and authority, and that it is unnecessary to look beyond the provisions of the interstate commerce act itself and the rulings of this commission under it to support them.

Since the former hearing, and indeed even since the decision of July 29 was made, facts and circumstances have arisen which have materially changed the situation of the carriers and the conditions affecting them from those existing at the time of the former hearing, and which, taken in connection with the facts produced at the former hearing, we believe will fully justify the granting of the relief asked for. We believe that had the conditions at the time of the former hearing been what they now are, the decision of the commission would have been very different. We applied to the commission to grant a rehearing in view of such new facts and changed conditions, and the commission granted the rehearing. We are therefore now here, not asking that the commission assume to exercise any power beyond its lawful authority, but that, pursuant to the express provision for such case made and provided by Congress, it fully consider on this rehearing not only the facts and circumstances arising since the former hearing, but all the facts, *including* those arising before as well as since the former hearing.

Until the passage of the Hepburn act in 1906 there was no express provision in the interstate commerce act for rehearsings. At that time Congress, anticipating, perhaps, that emergencies might arise when the commission clearly should have the power to grant a rehearing on all the facts, including those arising since the original hearing, added a new section to the Act—Section 16a, providing that after any decision has been made by the commission, any party may make application for a rehearing of the same or any matter determined therein, and it shall be lawful for the commission to grant such rehearing if sufficient reason therefor be made to appear. It further enacted that if in its judgment, after such rehearing and *a consideration of all facts, including those arising since the former hearing*, it shall appear that the original decision or order is in any respect unjust or unwarranted, the commission may reverse, change, or modify the same accordingly.

For a rehearing and consideration such as that contemplated and provided for by Congress, it is essential that all the existing facts and conditions be considered with open mind and unprejudiced by the former decision made under other conditions.

On such a rehearing the question should be considered and determined upon all the facts as they now exist and brought down to date.

Among the new developments bearing upon the case is the great war, which was unforeseen when the former decision was made. To use the apt words of the President, the mighty forces of war and of change have disturbed the world. It has already involved most of Europe and a large part of Asia, Africa, and British North America. It has brought about an unparalleled destruction of wealth and dislocation of credit throughout the civilized world. It is probably the most momentous event in modern history, and no one can yet clearly foresee its boundaries, its limits or its consequences. The sun never sets on the countries now involved, or, in fact, even on the present warfare. It is too early to estimate its effects, but it cannot be doubted that they will be world-wide, great and long-continuing. Probably what has already transpired is but the first shadow of what is yet to come. The old order of things has been shattered, and all the king's horses and all the king's men cannot restore the conditions existing a few months ago when the former hearing occurred. The effects of the war are not limited to the countries directly engaged, but they extend to neutral countries. They have already, in many ways, changed conditions in this country and have affected and will continue

to affect the situation of these railroad companies in important ways pertinent to this inquiry.

The credit facilities of the civilized world have broken down. Moratoria have been declared in many countries, stock exchanges have been closed, foreign exchange has been seriously disarranged, and the world's machinery of credit, international, national and corporate, is endangered.

Wealth and property are being destroyed upon an enormous scale. The price of capital has already materially increased, and will continue to increase. Securities have already declined to a disturbing extent, and there is grave danger of a further serious decline.

As shown by Mr. Conant, an international authority of high repute, the direct cost of the war, if it lasts approximately a year and does not extend to other countries, will not be materially less than fifteen billion dollars. This estimate of the appalling destruction of capital for war purposes is based upon the experiences in other recent wars, and includes only a conservative allowance for the cost per man per day of the millions of men engaged. It is supported by known facts as to actual disbursements already made and the estimates of some of the most eminent European economists. Even this vast sum does not take into consideration the loss of other vast sums resulting from destruction of property, the impairment of the industrial production, and the derangement of the machinery of distribution. Even if the duration of the war should happily prove to be less than a year, a large portion of the direct expense would continue during the process of reducing military forces to a peace basis, and a considerable time would be required for restoring to former conditions the industrial and economic fabric. So that, even if an early cessation of the war should permit some reduction in the cost based upon the estimates for a year, it would still leave great sums—probably not less than ten billion dollars—to be raised by loans and taxation in the countries involved.

The amount of annual savings of capital throughout the world for investment, that is to say the amount of capital annually available for investment, is shown to be not much in excess of four billion dollars, so that, as shown by Mr. Conant, the demand for capital for purely war purposes and for the settlements which will succeed the war, will be so great as to absorb an amount equal to the entire savings for investment made in all civilized countries for a period of at least several years. Apparently some of the powers at war are already exhausting the moneys which were available to them for war purposes at the beginning of the war, and have already commenced to offer war loans. Germany has already offered loans amounting to more than one billion dollars for war purposes, and is contemplating the raising of two and one-half billion dollars to furnish employment for her people at home on internal improvements. England, France and other European countries, including some that have mobilized, but are not at war, have commenced to offer war loans.

Under these circumstances it would seem practically certain that the greatly diminished supply of capital in Europe available for investment will, because of patriotic and business and other considerations, be invested at home, and there is no reason to hope that for a long time to come any considerable amount of European capital can be diverted, as it has been heretofore, to the purchase of new securities which the railroad companies must issue in order to refund maturing obligations and to make necessary betterments and improvements. The demand for new capital will surely be much greater than the available supply. It inevitably follows that this great demand for capital resulting from the war and war loans will largely raise the rental price for the use of capital or interest rates, for many years to come, and even then many who seek new capital will have to go empty-handed. Already rates have largely risen, both at home and abroad. The new German loan bears 5 per cent interest,

and it is understood is being put out at less than par. In this country, rates for call money and commercial paper have risen to from 6 to 8 per cent, and borrowers of such undoubted credit as the city of New York, and one of the United States, have been obliged to pay as high as 6 per cent or more for short time accommodation. Railroads, such as the New York Central and the Erie, have been unable to refund maturing short time notes, except by the issue of other short time notes, and even then only with great difficulty and upon an interest basis of about 7 per cent in the one case and about 8 per cent in the other.

It is clear that one of the effects of the war will be to raise the interest rates on investment securities much higher than it has been for many years, and that these railroads will have to pay for any new capital they may be able to obtain, interest at a rate considerably higher than that paid by governments.

In the judgment of competent witnesses, this apprehended liquidation of our foreign-held securities will be substantially retarded or accelerated according as to whether the railroads are now permitted to charge such just and reasonable rates as will secure them adequate net revenues.

The suggestion has been made by counsel that the railroads can remedy their situation by curtailing or suspending dividends. It would hardly seem that such a suggestion will receive serious consideration. Unless the railroads as a whole are able to receive rates for their transportation services that will produce net revenues sufficient to meet reasonable dividend requirements and leave a reasonable surplus as a margin of safety to help defray "the cost of progress" and secure the future stability of rates, establish confidence in the continuation of dividends, and otherwise maintain credit, there is but little ground to believe that private investors will afford the necessary new capital.

Curtailment of dividends would aggravate the situation, while suspension of dividends would make it increasingly difficult to obtain any capital, even by the sale of bonds. Total suspension of dividends by the railroads, though it would produce a panic, would not produce the amount of new capital required.

Moreover, such a suggestion is impossible of application by a large number of railroads in Official Classification territory which are most in need of relief and which are now unable to pay any dividends. Out of 73 roads, a list of which is filed with the commission, having stock outstanding in the aggregate of \$2,500,000,000, 40 roads pay no dividend upon capital stock amounting to over \$687,000,000, or 26.8 per cent of the whole. Also, five roads pay dividends of less than 4 per cent upon a capital stock of over \$220,000,000, or 8.6 per cent of the whole, and that 16 of these roads pay dividends of less than 6 per cent upon capital stock aggregating about \$482,000,000, or 18.8 per cent of the whole.

In this connection it is worthy of note that a number of the roads that appear in the table as paying some dividend last year and as being in the dividend-paying class, like the New Haven, have now passed into the non-dividend paying class and have no dividends which they can reduce for any purpose.

It is not contended by these carriers that the commission have the power to, or should undertake to, approve rates that will be unjust or unreasonable, or that the commission have the power to or should undertake to, approve rates irrespective of their being just or reasonable, merely on the ground that such action would "stimulate business" or "restore confidence in the financial and business world" or accomplish any other such result, although such accomplishment might be very desirable in itself. I do, however, contend that in determining whether the carrier's charges for its transportation services are just and reasonable, the commission have the right, and it is their duty, to take into consideration, among other things, the adequacy of the net operating income derived therefrom, its sufficiency to enable the carrier properly to perform its important quasi-public functions, and to secure the new capital necessary therefor, and for the other related matters of public interest and welfare to which reference

has been made in this case, and that this view is amply supported by both reason and authority.

In addition to all these considerations, which properly should be taken into account in determining the maximum rates which would be just and reasonable, there are other considerations of public and private interest which properly should be taken into consideration in determining the method and time of relief, if not the amount. *If there are several methods by which the commission lawfully can enable the carriers to find relief from the existing inadequacy of their revenues, and one of these methods will also promote the welfare of, or safeguard public or private interests, while the adoption of the other method will either not accomplish that result or be doubtful in its effect, then I say the commission should take these matters into consideration and should adopt the method of relief which will insure to the benefit of all.*

Until the passage of that act of 1887, Congress had not assumed the control and regulation of the railroads, generally, except to constitute them post-roads. *By the interstate commerce act, as amended, Congress has declared a new public policy toward the railroads and has adopted and made them instrumentalities of the federal government, with new duties and obligations to which they were not subject under the common law, or under the laws of the states that created them, but which have been newly imposed by Congress.*

The basic, and I think by far the most important provision of that act, is that contained in section 1, by which it is made the duty of every carrier subject to the provisions of the act to provide and furnish, upon reasonable request, all transportation, as broadly defined by the act, over all the railroads, owned or operated, as broadly defined; and to establish through routes and just and reasonable rates applicable thereto; and to provide reasonable facilities for operating such through routes.

This is one of the provisions which, by section 12, the commission is broadly authorized and required to execute and enforce.

Another such provision is that contained in section 5, which requires that "in time of war or threatened war, preference and precedence shall, upon demand of the president of the United States, be given, over all other traffic, to the transportation of troops and material of war, and carriers shall adopt every means within their control to facilitate and expedite the military traffic."

Thus Congress has declared its policy that the railroads remain under private ownership and continue to be maintained by private capital, and—except as otherwise provided in the Act—operated under private management. It has, moreover, made them public instrumentalities, charged with the duty of performing, and being ready and prepared to perform, upon any reasonable request therefor, all transportation services which the public or government may call upon them to perform on any reasonable notice, either in time of peace or war. Congress has recognized that the carriers cannot perform the duties so imposed unless permitted to charge rates just and reasonable to enable them to accomplish what is involved in such performance; and the commission should take the requirements of these provisions into consideration in passing upon the question of the propriety of the proposed rates. The railroads must be given strength to accomplish—and to be prepared to accomplish—the task so imposed upon them—and remunerative rates, and adequate revenues, are the very sinews of that strength.

I think this principle has been recognized in previous decisions of the commission.

In the Western Advanced Rate case, decided February 22, 1911, the commission, speaking by Commissioner Lane, said:

"We do not say that the carriers may not increase their income. We trust they may and confidently believe they will. If the time does come when through changed conditions it may be shown that their fears are realized or approaching realization, or from a survey of the whole field of operations there is evidence of a movement which makes against the security and last-

ing value of legitimate investments and an adequate return upon the value of these properties, this commission will not hesitate to give its sanction to increases which will be reasonable."

In the majority report on the former hearing in this case, Commissioner Harlan said that railroads, although constructed with private capital, are public highways subject to public control, and that in constructing and maintaining such a highway under public sanction, the railroad company really performs a function of the state; that, "unlike most other countries, we have committed the performance of this public function to companies of private ownership"; that "the policy of inviting and authorizing the performance of this public function by privately owned companies involves obligations on the part of the public to the owners of these properties." In the same connection it is further said that "the public interest demands not only the adequate maintenance of existing railroads, but a constant increase of our transportation facilities to keep pace with the growth and requirements of our commerce. If, however, that development is to be accomplished with private capital in conformity with our traditions, nothing can be more certain than that the facilities will not be provided except under such a system of regulation as will reasonably permit a fair return on the money invested."

In the light of these considerations of public interest and welfare, as well as that of the railroads, the commission found that "the net operating income of the railroads in official classification territory, taken as a whole, is smaller than is demanded in the interest of both the general public and the railroads; and it is our duty and our purpose to aid, so far as we legally may, in the solution of the problem as to the course that the carriers may pursue to meet the situation."

When the decision was handed down in July the commission, although finding that the revenues of the carriers, taken as a whole, are inadequate from the standpoint of the interest of both the public and the railroads, concluded that the carriers were not facing a crisis and had no cause for alarm, and that their need of relief was not so urgent as not to permit of the investigation of the possible sources of additional revenue other than by the proposed rate increase.

It was said in that connection that the railroad executives insisted that grave and serious responsibilities would be incurred if the commission failed to relieve the situation by at once approving the five per cent increase; that the principal danger suggested was that the carriers would incur great difficulty in refunding their maturing short-term notes and other obligations, unless the investors were assured that the carriers' revenues would be increased immediately, but that "subsequent developments have shown that there was little foundation for any such view."

The majority report further expressed the opinion that "the earning capacity of our railroads is so great that their credit will soon be restored if their revenues are conserved. The crop estimates give promise of greatly increased gross revenues for the current fiscal year."

That a crisis now exists in the affairs of these railroads, and that their credit, seriously impaired as we believe before the war started, principally because of inadequate operating income, is now confronted by a grave emergency, would seem to be but plain truths. If this be so, we submit that the commission should aid, so far as they legally may, in the solution of the problem by permitting the carriers to secure a more nearly adequate net income through the proposed increased rates.

The crisis which confronts the railroads has been emphasized, has been aggravated and has been made more clear and certain by the war, but the war does not constitute and did not alone create the existing crisis in our affairs. That crisis existed before the war and is reflected in the records of their operations and the long-continued increase in expenses and accompanying reduction in net revenues and income, whereby the railroad industry has been forced to become an industry of constantly decreasing returns.

The nature and extent of the public interest involved and the occasion for co-operation of those in private or in official position in aiding to meet the situation in every proper and legitimate way are clearly indicated in the letter recently sent by the President to Mr. Frank Trumbull as chairman of the Committee of Railroad Executives, who had presented to him some aspects of the situation.

The various departments of the Government are now engaged in doing whatever they properly and legitimately may to aid in the restoration of normal financial and credit conditions and to protect investors and business interests generally and the public interests involved against the disasters that are threatening them. The comptroller of the currency has just instructed national bank examiners to pass unquestioned all collateral loans based on the closing prices for securities on the New York Stock Exchange July 30, and to recognize those prices as determining the value of securities held as collateral for loans by national banks, notwithstanding that since that time the securities may have sold at considerably lower prices and the prices of July 30 could not now be obtained. This action is in line with the policy which has been pursued by the New York state banking department. The treasury department is co-operating to the best of its ability and the extent of its authority to the same general end, and the Federal Reserve Board has entered earnestly upon the task of aiding the effort to relieve the cotton situation through the proposed "cotton loan fund."

It is obvious that the railroad and transportation interests of the country lie at the basis of our industrial and financial fabric, and that unless those interests can be made reasonably prosperous through adequate revenues, their financial necessities relieved, and confidence in the stability of their securities restored and maintained, no permanent relief from existing conditions can be expected. It is also obvious that the confidence of the investing public, both in this country and abroad, in the value and stability of our railroad securities has been impaired. That this is the situation has been established by the testimony, among others, of financial authorities, bankers, and economists of national and even of international standing and repute, and in their judgment, as well as in the judgment of those in responsible charge of these railroad properties, unless these conditions are promptly remedied, the effect must be disastrous to all interests, public as well as private.

In the majority report delivered by Commissioner Harlan on the former hearing, it was stated that the credit of our railroads has undoubtedly suffered in recent years, but that this was largely from causes that were independent of their rates. The majority were inclined to attribute this loss of credit and impairment of the confidence of the public in the stability of railroad securities largely to the mismanagement of some great railroad systems of international repute, to the circumstances leading up to the appointment of receivers for certain other companies, to the interlocking of railroad systems with weak lines, and other causes not related to the adequacy of rates or revenues.

However, upon the rehearing it now appears by the uncontradicted testimony of Mr. Strauss and others, that in their opinion and in the opinion of others who are best qualified to judge, while the considerations referred to in the majority report have operated to a relatively slight extent, yet the principal cause for the impairment of railroad credit and the impaired confidence in the value and stability of railroad securities has been the inability of the railroad companies to increase their rates to the extent necessary to secure to them reasonably adequate net revenues. As stated by Mr. Strauss, this is the view entertained by Sir George Paish, an eminent British authority upon the subject, and similar views have been publicly expressed both here and abroad by Herr von Gwinner, the managing director of the Deutsche Bank of Berlin, and himself one of the most eminent continental authorities upon the subject.

In the early stages of this case there was presented to the carriers the prospect of large additional revenues other than from

increased rates, such as extra charges for so-called free services to industrial roads, charges for the spotting of cars on industrial sidings, charges for lighterage and switching services in New York Harbor and elsewhere, and it was urged that the carriers could and should increase their revenues from such sources so as to render them adequate without resorting to increased freight rates.

At the first sight the glitter of the profit it was thought might result to the carriers blinded the eyes of many. In the light of recent events we have a clearer vision, and now we realize again the force of the familiar truth that "all that glitters is not gold."

The majority report of the commission also made certain tentative suggestions as to measures which might be taken by the carriers to secure additional revenues and thereby "to meet the situation" otherwise than by resorting to a general advance in their freight rates.

As shown in the carriers' petition and by the evidence of Mr. Willard and other witnesses, the carriers have given and are giving earnest attention to the recommendations and suggestions of the commission in those regards, but *one of the new factors in the case which we think the commission should take into consideration is that the hopes of increased revenue from most of these sources instead of having an early realization will not end in fruition in time to afford a relief for the present situation and crisis*, even though they happily may at some more remote period result in partial realization.

It is believed by those responsible for the management of the carriers that they cannot safely rely upon any expectation that the additional revenues which may ultimately be secured by the adoption of means other than a general advance in freight rates can be obtained in the near future; or that when secured any such additional revenues will be adequate to meet the reasonable needs of the carriers for increased revenues in the present situation.

It was asserted by Mr. Brandeis as special counsel for the commission in his brief on the former hearing that the commission's only function is to refuse to permit increased rates except upon proof that they are just and reasonable, "*and in the absence of such proof, to prescribe a rate that will be just and reasonable.*"

In the Eastern Advanced Rate case of 1910, the commission, speaking through Commissioner Prouty, held that the commission's authority is limited to inquiring into the reasonableness of a challenged rate "*and establishing the rate or practice which is found lawful in place of one condemned as unlawful,*" and again "*the question before the commission is still the same and is upon the reasonableness of the rate in effect if the advance has taken place, or upon the proposed advanced rate if the tariff has been suspended. . . . If, in our opinion, the rate is unreasonable, we must find what would be a reasonable rate and order the observance of that rate.*"

It is worthy of note in this connection that the commission, at the conclusion of its report in that case, required the defendants to cancel their advanced tariffs *and to restore their former rates*, which are the rates then and (substantially) for a long time prior thereto and now in effect. It is submitted that this necessarily involved a finding by the commission that the rates so restored were not more than just and reasonable rates. Apart from other considerations the changed conditions since 1910 would seem to be more than sufficient in themselves to justify the comparatively small increase now asked for.

The views so expressed by the commission in the 1910 case, and by Commissioner Daniels and by counsel for the commission in the present case, with respect to the power and the duty of the commission to themselves determine and prescribe the maximum reasonable rates to be charged by the carriers in case the commission determines that challenged rates are unjust and unreasonable, would seem to be fully borne out by the provisions of the Interstate Commerce Act with respect thereto.

Section 15 of the Interstate Commerce Act provides that when-

ever after full hearing the commission shall be of opinion that any rates or charges charged by any carriers subject to the act for the transportation of persons or property are unjust or unreasonable, "the commission is hereby authorized and empowered to determine and prescribe what will be the just and reasonable individual or joint rate or rates, charge or charges, to be thereafter observed in such case as the maximum to be charged, . . . and to make an order that the carrier or carriers . . . shall not thereafter publish, demand or collect any rate or charge for such transportation in excess of the maximum rate or charge so prescribed."

It is further provided that all orders of the commission shall continue in force for such period of time, *not exceeding* two years, as shall be prescribed in the order of the commission.

By a further provision the commission may, as they have in this case, enter upon a hearing concerning the propriety of rates before they go into effect, and may, as therein provided, suspend the operation of such new rates, but the order which, after full hearing, whether completed before or after the new rates go into effect, the commission are authorized to make in reference to such new rates is only such as would be proper in a proceeding initiated after the rates had become effective.

The officers of the carriers who are responsible for the management of these railroads, conscious of the responsibilities devolving upon them and of their duties to shippers, to the public at large and to the holders of their bonds, capital stock and other securities, filed with the commission, in the manner prescribed by Congress, the advanced rates in question. They believed then, and they now believe, that such advanced rates were and are well within the limits of what would be just and reasonable. They have endeavored to present to the commission as fully and as fairly as possible the facts bearing upon the propriety of these advanced rates in the effort to satisfy the commission that they are just and reasonable, and in order to aid the commission to determine what will be the maximum just and reasonable rates in case the commission finally shall be of the opinion that such advanced rates are unjust and unreasonable.

Under the law and the facts in this case, in the event that the commission are finally of opinion that the rates are unjust and unreasonable, or in the event that they do not feel justified in allowing the rates to go into effect without exercising their power of suspension, should not they themselves presently determine and prescribe the maximum reasonable rates which the carriers will be permitted to charge and which will produce the adequate net income which the existing rates do not produce?

We hope and believe that, upon all the facts which the whole record now contains, the commission will find that the proposed rates are no more than just and reasonable and allow them to become effective, before it is too late; but in case the commission determine to the contrary, should they not, in that event, as a matter of sound discretion (even if they are of opinion that the provision of the statute in that regard which I have quoted is not mandatory) adopt the course indicated by the statute, instead of requiring the carriers to await the outcome of the attempted application of the tentative suggestions as to substituted measures which might be taken by them to secure additional revenue? Would not that be the better, proper and safer course to pursue in such contingency—particularly in view of the fact that the carriers believe that what can be accomplished through such suggested substitute measures will be too inadequate in amount, and too remote in point of time, to provide necessary relief, and that the record justified that belief, and in view of the further fact that the carriers, and the great public and private interests dependent upon their future welfare, otherwise would be subjected to the great risk of such alternative measures proving to be inadequate or ineffective?

It may be said that even conceding the correctness of the rule that the carrier is entitled to charge just and reasonable rates that will produce adequate revenues, it is difficult to apply the rule in practice, or to ascertain or in terms define it. It is true that the results cannot be determined with the ease and certainty of the

application of a mathematical rule or the weighing of a commodity; but that affords no reason for abandoning a proper and logical rule, which is as definite as the constitutional guarantee that property shall not be taken without just compensation or without due process of law, or as the rules with respect to the taking of property by eminent domain. Though it were as difficult to express and define all the elements which constitute this standard, as the star by which the mariner steers his ship is unattainable, it none the less affords as safe and sure a guide.

FREIGHT CAR SURPLUSES AND SHORTAGES*

BY ARTHUR HALE

General Agent, American Railway Association

Eight years ago, in the fall of 1906, the country suddenly awoke to the fact that there was a great shortage of freight cars. No one knew just how great the shortage was; no one knew just where the shortage was, although it was widely stated that it was the greatest car shortage in history and was felt everywhere. The car shortage was coincident with serious congestions of loaded cars in many parts of the country. No one knew whose fault it was, although it was widely stated that it was the fault of the railways.

There was an investigation of the subject by the Interstate Commerce Commission, but the report contained no positive recommendations.

The railroads of the country, however, took up the question very seriously and arranged to secure current information as to car shortages and their causes and effects. They also, with the help of the interstate and state commissions, revised their demurrage rules, making them stronger, fairer and more uniform. We are still far from perfection, but possibly as a result of this action by the railways, we have since 1907 had no shortages or congestions comparable with those of 1906. The statistics which the railways have gathered have enabled them to foresee coming shortages, and to take such steps that when a period of car shortage does come it is met, so far as may be, by an improvement in car efficiency. There have been some congestions of loaded cars but whenever any marked congestion has occurred it has usually been composed of cars loaded to a point where there has been some defect in the demurrage rules or in their administration.

The statistics are collected by the American Railway Association. They include not only the car shortage and car surplus figures, but also figures showing the location of cars on the various roads, the average number of miles the cars make in a day, and comparisons of this daily car mileage with the earnings and the ton mileage. Most previous car statistics had been based upon the performance per mile. These new statistics introduced a time factor, and showed the car performance by the day. And much light has been thrown on the subject by these statistics, chief of which are the mileage per car per day, the percentage of loaded mileage, the tons per car and the ton-miles per car per day. Some of these terms and the situation which they deal with may seem abstruse. The car shortage is plain enough. It is reported whenever a shipment is offered for transportation and there is no car for it. It may be that the car shortage is only for a day or so and the shipment is merely detained at loading point until the cars arrive. On the other hand, when car shortages are serious and long continued, a shipper may send his shipment in via some other route so that it is lost to the railroad. Worse than this it may be that the order for the goods is cancelled in which case the shipment is not made at all.

A car surplus is reported whenever an empty car stands more than one day without a load. A reasonable car surplus is an advantage both to the shipper and the railroad, because

*A paper presented at the Conference of the Western Economic Society on American Railway Problems, Chicago, November 13 and 14.

it enables the railway to fill unexpected orders. Railways try to get shippers to order their cars a day ahead, but even the shipper himself cannot tell just what cars he will need until the very day of shipment and if there is not a certain amount of surplus unexpected shipments may be delayed.

The location of freight cars on the various railways is necessary if we are to know whether a railway or group of railways is supplying its proper quota of freight cars. The location is simply a report of the number of cars in use on a railroad and when this number of cars is compared with the number of cars which the railway itself owns we know at once whether the railway is using cars in excess of what it owns, or on the other hand, is forced to get along with a deficit in cars.

If for any period a railway reports a car shortage and for the same period is using cars in excess of what it owns, it is quite evident that that railway does not own enough available cars. It would seem to be the duty of such a railway either to purchase more cars or to improve its other facilities so that the cars which it owns can do more work.

It is to give the railways a standard for the work done by their cars that the other figures alluded to are compiled. Every railway ought to know every month the average number of miles per day its freight cars travel. To know whether or not this is a good showing, it must be in position to compare its own records with the records of other railroads. Again it helps a railway very little to know how many miles a day its cars are moved if it is not assured that a proper proportion of these miles is made under load. A high percentage of loaded mileage is an indication of good performance.

But this is not enough. Unless the cars are loaded as nearly as possible to their full capacity, a high percentage of loaded mileage may be altogether deceptive, and to ascertain whether proper loads are being secured, the ton miles are counted up and are compared with the car miles, so that each road may know for itself and its neighbors the average load per car, and what is better yet, the number of ton miles per car per day.

Perhaps this may be clearer if we investigate in the same way the economies of a man's automobile. Its first duty is to take the man to work and back. It is five miles from the man's house to his office. The man is taken alone into town. The car returns empty and in the afternoon the operation is reversed, making 20 miles a day. During the interval the automobile travels 30 more miles with members of the man's family; 10 of these miles are empty and the other 20 it carries, on an average, two people. We will then have for the car 50 miles a day of which 60 per cent is loaded; one passenger per car mile and $1\frac{1}{3}$ passengers per loaded car mile and 50 passenger miles per car per day. We can hardly say that there is even a car surplus except at night. We may conceive that there is an automobile shortage for certain periods of the day. For instance, soon after the man has gone into town in his automobile, his wife may want it. Then there is a shortage of one car until it returns from town. In the same way the husband may need the car during the day or he may want it earlier than usual in the afternoon. He is short a car for these hours, because the automobile is not available. When the man cannot get the automobile for his return home, he may go back on the trolley. The automobile may be sent for him in error and may then make a round trip of 10 unnecessary empty miles, which would bring down the percentage of loaded mileage for that date from 60 per cent to 50 per cent, a bad showing. This would be a case when a car shortage actually resulted in the loss of a shipment. Ordinarily the automobile shortage would result merely in the delay to the man's movements. This, as above, is exactly what generally happens in a freight car shortage.

We can conceive that the delay to this automobile might lead to an approach to a demurrage system. If the wife holds the car an hour too long, the man might perhaps withhold \$1 of her allowance. This would be the equivalent of demurrage. If, on the other hand, the man kept the automobile in town too long in the morning, his wife might be in a position to inflict some penalty upon him, possibly in the quality of his dinner.

When the automobile breaks down and has to be sent to the garage for repairs, we have 100 per cent cars in shops and a constant car shortage.

Suppose that the inconvenience of the arrangement is such as to induce the man to buy another automobile, and suppose the two cars now divide the work formerly done by one. We will then have a surplus of one car at one or another point most of the day, but normally there will never be any shortage, except when one of the cars is in the garage for repairs. It may happen that the work will be done with less total mileage, as the husband will be able to keep one car in town all day until he uses it back home in the evening. The total mileage for the two cars will then be only 40 miles, only 20 miles per automobile per day, apparently a bad showing; but the percentage of loaded mileage will be increased from 60 per cent to 75 per cent with the same $1\frac{1}{3}$ passengers per loaded mile. The passenger miles per automobile will, however, drop to 25.

We have not the data to show whether or not this new arrangement is economical as compared to the old. One can conceive a man's friends accusing him to extravagance in keeping two automobiles to do the work of one, and of his explaining that he saves the gasoline necessary for ten miles of unnecessary empty movement. While his two machines will undoubtedly depreciate more through obsolescence than did the one, they will depreciate much less by use. The man may indeed conclude that the extreme convenience of the new arrangement is worth all that it costs.

In the same way the public is pleased with the railways when they can supply them promptly with cars, though it is unfortunately a fact that when there are no car shortages the mileage per car is low and frequently the percentage of loaded mileage as well.

Perhaps the most economical arrangement for our friend of the automobile would be to confine himself to one machine to take his family down town with him and make them stay in town until he was ready to go home. Here we would get more favorable looking automobile statistics from an economical point of view, but this would be at a sacrifice of a great deal of convenience. There would be frequent losses of tonnage when one party was not ready for another. Here again when our car statistics are most favorable economically it is always during a period of car shortage when shippers are sometimes obliged to wait a day or so for cars before they are able to make their shipments.

Taking another case, a little more technical. Let us suppose that some small railway has 100 stock cars which are regularly occupied in hauling stock a distance of 100 miles to make a Saturday market. We will suppose that these cars leave the point of origin on Friday, that they make the market on Saturday and that the stock cars are utilized with a return load which with its necessary delay for loading and unloading and slow freight movement occupies the rest of the week. Here we have a record of nearly 29 miles per car per day. There is a 100 per cent loaded mileage, the cars average 10 tons of stock and 30 tons with return load, so that the average tonnage per loaded car is 20 and the tons per mile per day are 429, all very good figures. Suppose that through some technicality or other mischance it is discovered that there are no demurrage rules in effect on the return load. The consignee finds that he need not unload the cars at destination on arrival but can await until his men are

through with certain other work. He then takes four days on an average to unload the cars instead of the two that it took before.

Now, you will remember the cars are in the stock trade two days in the week. The day after they are released is Sunday, and they have been occupied for the other four days of the week with the return load. Just as soon as the consignee begins to use four days in unloading, the cars will not be ready on Friday for the regular stock movement, and there is a serious shortage of stock cars unless they are supplied from some other source. There may also be a congestion at the unloading point. The facilities have probably been arranged for unloading the cars in days. If four days are occupied on each car there will be twice as many cars as there were. Suppose that this extra delay makes the round trip average a week and a half instead of a week. Then 150 cars will be needed to do the work of 100. They will average only 19 miles per day instead of 29. The mileage will still be 100 per cent. loaded, but the ton miles per car day will drop from 429 to 286, a low figure.

As is shown in the diagram the various figures have a distinct relation to each other. When there is a car surplus the percentage of loaded mileage falls, so does the mileage per car per day. The percentage of loaded mileage remains low until a car shortage comes, when at once the cars move faster and are loaded heavier. The car mileage applying as it does to all the cars is, of course, directly affected by the car surplus inasmuch as a surplus car does not move, but it is quite evident that the cars in motion do not move as fast as they did under the pressure of a car shortage. This is shown in the diagram by the two curves representing the ton miles per car per day, one of which excludes surplus cars and the other includes them.

It cannot be said that the introduction of these statistics has made any marked change in the practice of American railways. Their use has only confirmed transportation men in their old conviction that freight cars should be moved as fast as practicable, that they should be loaded as heavily as practicable and that empty mileage should be avoided. These are the principles on which the good car distributor has always worked on the division and the good superintendent of transportation at headquarters. The statistics are chiefly useful to them as a record which enables them to foresee coming shortages and to tell them whether or not they have handled their equipment well as compared with previous years or with other railroads.

Whatever conclusions are derived from the statistics must always be modified by traffic considerations. An attempt to handle cars too economically will discourage traffic and it is for this reason that the car surplus figures are of such great importance. If one railroad has a car surplus while its neighbors have occasionally car shortages, it is well to examine the situation and make sure that it is not attempting undue economies in the handling of its freight cars.

REPORT ON TIPTON FORD COLLISION

The Interstate Commerce Commission has issued a report by H. W. Belnap, Chief, Division of Safety, dated September 19, on the butting collision of passenger trains on the Kansas City Southern near Tipton Ford, Mo., on August 5, in which 38 passengers and 5 employees were killed and 34 passengers and 4 employees were injured. The collision was reported in the *Railway Age Gazette*, August 7, and in an editorial in the issue of August 14, the problem of the prevention of collisions and the relation thereto of the gasoline fire hazard were briefly discussed.

The collision occurred on a straight line where there is a view, from curve to curve, of about 900 ft. The tangent is 550 ft. long, and the collision occurred about 100 ft. south of the middle of it. Each train was running about 35 miles an hour. The operator at Joplin who handled the train order which figured in this collision, an employee of the Joplin Terminal Com-

pany, had been in the service of that company only about two weeks.

The conductor of the train which ran past the appointed meeting station was killed. There was a suggestion that the conductor's signature, on the copy of the order produced by the operator, was not genuine, but Mr. Belnap throws little or no light on this point, nor does he say who made the charge of forgery.

After stating these and the other facts, already known to the reader, he concludes his report as follows:

"This accident was caused by southbound train No. 209 failing to wait at Tipton Ford for northbound train first No. 56, as directed by order No. 84.

"While at the hearing before the Public Service Commission of Missouri the question was raised as to whether or not the name 'Nicholas' on the carbon copy of train order No. 84, furnished by Operator Hadley, was the signature of Conductor Nicholas, there was no positive or direct evidence that the signature was not genuine. While a number of persons saw Conductor Nicholas with papers in his hand at the train register book and when leaving it, no person saw him sign or receive train order No. 84 except Operator Hadley, who is positive in his statements that Nicholas signed and received this order at Joplin. On account of the entire crew of train No. 209 being killed in the collision and their bodies cremated, no evidence is procurable as to the reason why the direction contained in order No. 84 was not obeyed by them.

"Conductor Nicholas entered the service of the Missouri & North Arkansas as a brakeman on January 17, 1901, and was promoted to conductor on April 1, 1901. In June, 1901, he left the service, but was reinstated as conductor in April, 1902. On November 15, 1906, he was promoted to superintendent, but resigned that position September 12, 1908, and resumed work as a passenger conductor. His record was good.

"Operator Hadley is 29 years of age and secured his first position as an operator in 1903, since which time he had been in the employ of eight different railroad companies. It further appeared that when he first became a telegrapher he was discharged by the Atchison, Topeka & Santa Fe at Holly, Colo., for failure to deliver a train order. He entered the employ of the Joplin Terminal Co. about July 22, 1914, and had been rendering satisfactory service.

"This is the first accident investigated by the commission wherein a gasoline motor car was involved. On account of the fire caused by ignition of this highly inflammable substance, the casualty list in this accident was much larger than it otherwise would have been. The rapidly increasing use of these motor cars, carrying large quantities of gasoline, introduces such an additional element of danger as to demand extraordinary precautions against the possibility of collisions wherever such cars are used.

"As previously noted, no block-signal system is in use on the Kansas City Southern. It appears also from the facts developed in this investigation that even the inherently weak train-order system is not used at its highest degree of efficiency on this railroad. Rule No. 208 provides for the placing of a meet order at the designated meeting point 'when practicable.' It was obviously not practicable to use the middle order in this case, for the reason that no operator was stationed at Tipton Ford.

"The 20 miles of track between Joplin and Neosho is used jointly by trains of the Kansas City Southern and the Missouri & North Arkansas. Four first-class and two third-class trains of the latter road are scheduled to pass over this section of track daily, subject to the operating rules of the Kansas City Southern. There are two passing tracks between Joplin and Neosho and it must frequently become necessary to require trains to meet at those points; yet no operator is employed at either place, and it is thus rendered impossible to use the middle order at meeting points on this section of track."

Convention of Railway Electrical Engineers' Association

Electric Headlights, Wireless Telephones, Industrial Trucks and Head End Equipment Were Discussed

The seventh annual convention of the Association of Railway Electrical Engineers was held at the Hotel LaSalle, Chicago, October 27 to 30, C. R. Gilman, chief electrician, Chicago, Milwaukee & St. Paul, presiding. The secretary-treasurer reported a cash balance of \$1,125 and 541 members.

DATA AND INFORMATION

This committee sent a list of questions to 67 of the most prominent roads, 50 of which replied in considerable detail. In regard to the car lighting systems, it was found that in the United States and Canada there are 18,936 electric lighted cars, of which 12,458 are lighted by axle generator sets and 2,707 by straight storage. There are also 259,842 lead battery cells, 31,883 nickel iron cells and 273 head end generator sets in service. Within the past two years there has been a falling off in the use of the head end equipment. In regard to electric headlights, the returns from the circulars show that 12,432 arc lights and 1,287 incandescent lights are now in use. This is a material increase in the use of incandescent lights over the roads reporting last year. Under the subject of Shop and Station Equipment it was found that about 25 per cent of all the lighting units reported were 250 watt Tungsten lamps, and about 21 per cent alternating current arc lamps. The use of the Tungsten filament lamps greatly predominates in the shops of the railroads reporting. The total capacity of the generators in use by those roads replying to the circular is 123,401 kw. alternating current and 65,077 kw. direct current. Of 415 shops reported, 42 per cent, representing 30 per cent of the total power, purchased power from local central stations, while 58 per cent of the shops, representing 70 per cent of the total power, generated their own power. The horsepower of the motors reported in use in the shops amounted to 176,954, or 5.37 hp. per locomotive handled in those shops. The following table shows the number and total power of the various types of motors reported:

Type of motor.	Number	Total horsepower	Average horsepower	Horsepower greatest number
Direct current	4537	70,234	15.5	5
A. C. single phase.....	177	527	3.0	3/4
A. C. two-phase.....	1118	17,150	15.3	10
A. C. three-phase.....	5601	96,595	17.3	10

The direct current motors are very much more numerous in the smaller sizes than the a. c. motors, and constitute 40 per cent of the total number and 38 per cent of the total horsepower of motors in use on the railroads reporting.

The information gathered on shop traveling cranes showed that there is a wide difference in the motor horsepower used for the same capacity cranes. For instance, the main hoist motors of 108 cranes of 10-ton capacity, as reported, varied from 7 h.p. to 50 h.p., with an average of 26.5 h.p. The committee recommended that a committee be appointed to establish standard sizes of motors and motor mountings for the cranes, as it was believed that much cheaper equipment could be obtained and the cost of maintenance would be much less.

The report is signed by: E. Wray (Elec. Eng.) chairman; T. V. Buckwalter (Penn.); C. J. Causland (Penn.); B. F. Bilsland (Gen. Elec. Co.); A. J. Farrelly (C. & N. W.); J. E. Gardner (C. B. & Q.), and W. M. Wiggins (Pullman Co.).

STANDARDS

The committee on Standards restricted its work this year to the following three subjects: Axle pulleys, generator pulleys and generator pulley fits on armature shafts. It emphasized particularly the necessity of establishing standards for generator pulleys. At the present time there are more than 20 different types of generator pulleys and more than 10 different pulley fits. Two sizes of axle pulleys were recommended, one having a maximum diameter of 21 in. on the crown of the face and the

other 16 in. Two sizes of generator pulleys were also recommended, the large pulley to be 10½ in. in diameter and the smaller pulley 8 in. in diameter, both being measured on the crown of the face. While the committee recommended a generator pulley fit with a ¾ in. in 12 in. taper, a 1½ in. shaft, and a 2½ in. hub, it was finally decided to make the generator pulley fit with a 1½ in. in 12 in. taper, a 1½ in. shaft and a 4 in. hub. It was believed that by doing this the larger pulley bearing obtained on the shaft would be of value and the longer hub would permit of having the web of the pulley nearer the center. It was also suggested that the 1½ in. taper would correspond with the taper recommended for roller bearings, and thus keep the recommendations of the association standard.

The report is signed by: D. J. Cartwright (L. V.) chairman; J. H. Davis (B. & O.); E. W. Jansen (I. C.); Ward Barnum (L. & N.), and C. H. Quinn (N. & W.).

ELECTRIC HEADLIGHTS

It was believed that wiring from the generator to the headlight through the hand rail was more costly in the long run than where a separate conduit was provided. The use of a one inch conduit with condulets at the outlet with a special connection box at the cab so that the cab or conduit can be removed without interfering with the wires offers the best solution of the wiring problem. It is expected that within a short time the lamp manufacturers will be able to produce a lamp with a concentrated filament of high candle power that will prove very serviceable for the incandescent headlights of high power. Attention was also called to the battery headlights which are used with good results on the Southern Pacific. The lamps have a candle power of 140, and are of the nitrogen-filled Tungsten type, requiring 13 amperes at 6 volts. The headlight lamps are mounted in standard oil lamp reflectors and in addition to these three cab lamps and two blizzard lamps are used. The batteries have a capacity to run the entire lighting equipment for 13 hours. They are mounted on top of the boiler and are removed each trip with a jib crane for charging.

The report is signed by: C. R. Sugg (A. C. L.) chairman; G. E. Murray (C. & N. W.); J. J. Hack (So. Pac.); J. E. Gardner (C. B. & Q.), and L. C. Hensel (St. L. & S. F.).

Discussion—J. L. Minick, Pennsylvania Railroad, who participated in the tests of locomotive headlights conducted by the Pennsylvania Railroad for the Master Mechanics' Association, spoke of these tests and suggested that this committee co-operate with the committee of the Master Mechanics' Association and the Lamp Committee of the Association of Railway Electrical Engineers for the purpose of establishing standard methods of rating the different lamps, and of obtaining standard voltages.

WIRELESS TELEGRAPH AND TELEPHONE

Dr. Frederick H. Millener of the Union Pacific, presented an illustrated talk on the wireless telegraph and the wireless telephone as an adjunct in the operation of a railroad. Doctor Millener spoke of the experiments he had made on the Union Pacific towards finding a method of signaling the cab of a locomotive or communicating with a train. While experimenting he used a storage battery electric truck weighing 5,500 lb. He was able to control the movements of this truck throughout the narrow gage railway on which it was installed by means of the wireless, but he found that this method was not reliable as atmospheric conditions will sometimes interfere with the correct operation. It was therefore decided to discontinue the work on the mechanical wireless cab signal, as it would not be reliable. The next work taken up was the wireless telegraph between stations. These experiments were made for 600 miles west of Omaha, where it was found that in the summer the static electricity causes disturbances. On account of this the best results

could only be secured by using a higher frequency than 60 cycles, for when there is static electricity prevalent the musical note in the receiver is so low that it is confused with the atmospheric or static electricity. For this reason a frequency of about 550 cycles, transformed up to 12,000 volts in an open core transformer, was used.

It was found absolutely necessary to have the aerials close and compact, and they should be of simple construction and easy to repair. It has been found that the use of the flat top aerial is much more practical than the umbrella type. It should be elevated by two self-sustaining towers, the height of which should be at least 210 ft., and it should be constructed so as to stand a wind stress of 90 miles an hour. The aerial should be placed close to the tracks, as the wireless wave will be rendered directional by the track and will travel farther with the rail than in other directions. For more than three years the Union Pacific has been ready to install a wireless telegraph, but for various reasons not connected with the wireless, it has been postponed.

In the meantime, experiments have been made with the wireless telephone. The apparatus that has now been designed at the Union Pacific shops is a composite telephone. By that is meant, it is possible to talk by wireless and also to use part of the same apparatus to talk by wire between the cars, or, when at stations, to talk over the local or long distance wires by making connections between the cars and the local exchange. When used as a wireless telephone it will be possible to talk with the train ahead, the train behind, or the station. The device is so arranged that while talking from car to car it is selective talking and selective signaling. While talking on the long distance wire only one person at a time can talk from the train. The wireless system is placed in operation by first calling the attendant in the baggage car and requesting him to start the wireless generator. The aerial on the train sends the messages to the telegraph lines along the side of the track; part of these wires have been balanced up and equipped with condensers around the telegraph instruments and are used as an aerial for the station.

INDUSTRIAL TRUCKS

The committee on this subject recommended a standard capacity of 4,000 lb. for industrial trucks. A lower rating was not considered advisable for the reason that the industrial trucks are usually loaded to about 4,000 lb., or slightly in excess of that figure, and this condition would result in overloading. It was also recommended that a speed of 5 m. p. h. be made standard, with an exception of 7 m. p. h. for operation under special conditions where the runs are comparatively long and the runways free from workmen.

A standard voltage of 24 volts was recommended for general industrial truck service, and a battery consisting of either 12 cells of lead battery, with jar sizes 5 13/16 in. by 6 3/16 in., with a high bridge and a 5/32 in. wall; where Edison batteries are used, it was recommended that 21 A-6 cells assembled in three trays of seven cells each be used. It was also recommended that the motor voltage be rated at 24 volts.

The report is signed by: T. V. Buckwalter (Penn.) chairman; C. E. F. Ahlm (Elwell-Parker Elec. Co.); F. H. Fildes, (Penn.); A. H. G. Grorer (C. W. Hunt Co.); J. E. Hale (Goodyear Tire & Rubber Co.); H. G. Thompson (Edison Storage Battery Co.), and Dr. W. E. Winship.

ELECTRIC TRACTION

The committee on Electric Traction reviewed the present status of electric traction as applied to steam roads, the ordinary urban and interurban line not being considered. A short description of the various railroad electrifications, both in this country and many European countries, was included in the report.

Direct Current Installation.—In regard to the use of direct current on railroad lines the committee stated that the low voltage system is extremely flexible and is particularly desirable for its range of operating speed, but it cannot be considered economical for long lines carrying heavy traffic, as expensive sub-

station installations are required in such cases, and the distribution system will be unduly expensive. The potential used for these installations varies from 500 to 750 volts, and for traction work a third-rail system of distribution is almost universal, as it is not practicable to collect the heavy currents taken by the locomotive from a trolley wire. It has been a natural step in the progress of electric traction to increase the voltage and thus reduce the amount of current to be transmitted for a given load requirement. The voltage of 2,400 and 3,000 volts is now considered standard for high voltage, direct current, heavy traction installations. It is doubtful if a third-rail system of distribution will be desirable for this high voltage direct current due to the necessity for considerable insulation coupled with the requirement of obtaining sufficient clearances for the installations.

Alternating Current System.—The attractive feature of the single-phase commutating motor type system has been its facility to supply electricity direct to the locomotive at high voltages, the only limit being the practical insulation of the locomotive equipment. It has not been found necessary to go beyond 12,000 volts up to the present time, and this potential provides for heavy power supply with 20 to 30 miles between generating stations, or transformer sub-stations if the power is taken from a transmission system. It has been the standard practice in America to use 25 cycles for this system as a higher frequency is not practicable. The advantages of this system consist in the elimination of sub-stations with rotating apparatus, an extensive electrification only requiring outdoor sub-stations containing transformers and switching equipment, and the smaller amount of copper for feeder requirements.

The three-phase system of distribution, operating induction motor equipment on locomotives, has been used considerably in Europe. A double trolley and track circuit is used for the three legs of the system. The only installation of this kind in this country is through the Cascade tunnel of the Great Northern and has been in successful operation for about five years.

Electric Braking.—In the case of the electrification of roads having heavy grades, such as occur on mountain divisions, the use of dynamic braking is an important consideration, as it saves the wear and tear on the mechanical braking equipment and adds to the safety of operation.

The report is signed by: H. M. Van Gelder (Westinghouse, Church, Kerr & Co.), chairman; J. H. Davis (B. & O.); D. C. Woodbury (N. Y. C. & H. R.); Paul Real (N. Y. N. H. & H.); C. P. Kahler (O. S. L.), and C. B. Keiser (Penn.).

AXLE EQUIPMENT

The committee on this subject found that almost without exception roads operating in the northwest quarter of the United States favor the head-end system on long runs for through trains. On the other hand, owners of practically all cars in the eastern half of the country and in the southwestern quarter, as well as the owners of all cars in Canada and England, favor the axle system exclusively for train lighting. From statistics obtained from various roads in the United States, Canada and England, it was found that on July 1, 1914, 23,472 cars were equipped with the axle lighting plant, while 4,627 were equipped with the head-end equipment. During the years 1913 and 1914, 3,642 cars were equipped with the axle lighting plant, whereas only 169 cars were equipped with the head-end system. The average cost for maintaining the axle-light equipment on one road operating 166 cars for the year ending December 31, 1913, is included in the following table:

Item	Road maintenance	Shop maintenance	Total maintenance	Cost per 1,000 car-miles
Generators	\$3,171.49	\$651.62	\$3,823.11	\$0.3192
Batteries	875.19	1,332.07	2,207.26	.1843
Labor	8,365.08	2,522.56	10,887.64	.9092
Total direct charge....	\$12,411.76	\$4,506.25	\$16,918.01	\$1.4127
Lamp renewals	1,995.83	162.92	2,158.75	...
Miscellaneous	309.18	488.05	797.23	...
Credit	55.00	369.11	424.11	...
Grand total	\$14,661.77	\$4,788.11	\$19,449.88	\$1.5241

The total mileage made by these 166 cars was 11,975,599 miles.

From the information obtained from other roads, the average cost per 1,000 car-miles for this road is somewhat below the average of all the roads from which the information was obtained. The average maintenance cost per 1,000 car-miles of those roads reporting in the United States was \$1.78, which corresponds to a cost per car per month of \$14.51. Attention is called to the high cost of maintaining dynamos as compared with all other parts of the equipment. The battery maintenance seems to be a little more than one-half that of a dynamo.

The report is signed by: H. R. Bucks (O. S. L.), chairman; R. L. Smith (Gt. West., Eng.), and E. M. Cutting (Edison Storage Battery Co.).

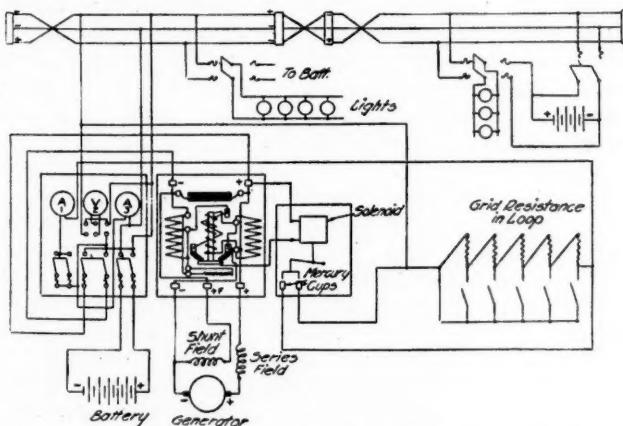
HEAD-END EQUIPMENT

The report of this committee was restricted almost entirely to the history and description of the axle-driven head-end generator as used by the Northern Pacific. In 1909 this railway experimented with an axle machine designed to light an entire train and the machine now in service is known as the Gould axle train lighter. It is a 20-kw., 6-pole commutating pole, compound-wound, 80-volt, 300 to 2,100 r. p. m. generator mounted on a cast-steel base, arching the center sills and extending into the car through two rectangular holes in the car floor. The machine is driven by a Morse silent chain from a countershaft, which in turn is chain-driven from the forward axle of the forward truck. The wheels on this axle do not have a brakebeam. The machine itself is ring oiled but the counter shaft is equipped with ball bearings.

The chain from axle to countershaft is encased in an oil-tight galvanized iron case and runs in a bath of heavy valve oil and graphite. The generator chain is not encased and is greased at intervals with a mixture of Kent's compound and flake graphite (half and half). Chains are being run this way for the purpose of observing the wear of chains and sprockets, encased and open.

The entire machine is covered with a wooden box fastened to the car floor and fitted with hinged covers.

The electrical circuits are in general similar to the standard



Wiring Diagram of Generator, Regulator Batteries and Train Line for Unit Axle System

head-end system of the Chicago, Milwaukee & St. Paul. The lamp current at present passes through a temporary variable resistance, causing a drop from charging voltage to 64 volts. A large lamp regulator of 125 amperes capacity is being constructed to take the place of the hand operated variable resistance and other test equipment now in the car.

The generator controlling apparatus consists of a regular Gould generator panel constructed on a large scale. The current coil limits the current to 125 amperes, while the voltage coil limits the generator voltage to 80 volts. The current coil is equipped with a shunt resistance that causes it to limit the current to 250 amperes if this is desired. The main switch closes at 66 volts, or when the train speed reaches 18 m. p. h.

Temporarily there is installed a solenoid which short circuits

the variable loop or lamp resistance when the main switch drops out. The new lamp regulator, which will be large enough to take care of the entire train, will take care of this feature.

The Gould axle lighter has made the following mileage to date without a light failure:

	No. of trips	Miles
From St. Paul to Glendive, Mont., and return....	2	2,668
From St. Paul to Seattle, Wash., and return.....	1	3,808
From St. Paul to Winnipeg, and return.....	32	30,796
Total miles		37,272

The equipment is practically hand operated at present.

The distribution of the batteries on the train equipped with the unit axle system is a point to be considered. It is the practice on the Northern Pacific to place 9 plate, 200 ampere hour batteries under the postal car, if any, the dynamo car, the standard sleepers and the observation car.

One fundamental difference between a steam head-end system and a unit axle system is that with the latter system the lamp load is carried by the batteries at every stop the train makes. For this reason steam head-end experience cannot be used as a basis for determining the exact relation that should exist between the connected lamp load in the train, the current output of the generator and the total battery discharge current at the eight-hour rate.

Following is a statement showing comparative costs of operating the steam head-end system and the unit axle system on the Northern Pacific:

	Steam Head End	Head End Axle
1,300 kw. hr.	1,300 kw. hr.	
Pounds of steam consumed by General Electric Company's turbine per kw. hr. delivered, for average load, per actual test N. P. and C. B. & Q.	160 lb.	.....
Pounds of steam consumed by axle generator per kw. hr. delivered (average load), based on 40 lb. of steam per drawbar h. p. (N. P. test), and 95 per cent efficiency in chain drive	.....	59.5 lb.
Total pounds of steam consumed per day for lighting of cars	208,000 lb.	77,300 lb.
Pounds of coal required per day for lighting of cars, based on 7 lb. of water evaporated per pound of coal (N. P. test).....	29,700 lb.	11,042 lb.
Cost of coal per day @ \$3 per ton.....	\$44.50	\$16.56
Cost of coal per year @ \$3 per ton.....	\$16,300	\$6,045.50
Wages per year:		
24 baggagemen @ \$5 per month, 36 train electricians @ \$85 per month.....	\$38,160	.....
Total cost per year, fuel and wages.....	\$54,460	\$6,045.50
Cost of current production per kw. hr. (fuel and wages above mentioned).....	11.5c	1.27c
Actual saving per year in favor of head end axle light system.....	.....	\$48,414.50

The saving on other roads of course depends on the wages paid to train electricians and other details of operation, but in any case it would no doubt be considerable. This is because the efficiency of the locomotive is approximately four times that of the turbine at one-third load and also because with the unit axle system all manual attention on the road is unnecessary. It has also proved unnecessary on the Northern Pacific to add local or terminal inspectors due to the use of this system. The men who have taken care of the steam head-end sets have no trouble taking care of the unit axle machines. In fact, due to the fact that no terminal charging is necessary with the unit axle system, they have more time to spend on inspection of machines.

The absence of excessive heat in baggage and express cars practically eliminates the claims for damages to baggage and express due to this cause.

The report is signed by: K. R. Hare (N. P.), chairman; Jos. A. Andreucetti (C. & N. W.); C. R. Gilman (C. M. & St. P.), and J. J. Hack (So. Pac.).

ILLUMINATION

From the results of the day coach tests reported at the last convention this committee recommended the following positions for the 2½ in. shade holder; 1½ in., ½ in. and 0 in. above the top edge of the reflector, and one position for the 4½ in. shade holder which is 1 in. above the top edge of the reflector. With some of the postal car lighting units, however, other positions

are required to give the proper distribution of light. The committee also recommended 65 deg. as the limiting screen angle of reflectors in car-lighting service—that is, no portion of the bare lamp filament or bare mantle should be visible to the eye when the unit is observed at an angle of 65 deg., or greater, from the nadir.

The committee also presented a progress report of the work they are doing on the illumination of classification yards, especially pertaining to track scales.

The committee believes that the incandescent lighting will eventually supersede arc lighting in the railway field, with possibly a few exceptions, although improvements have been made in the arc lamp that should not be overlooked.

In the incandescent lamp field the most important improvements have been made in the development of the high candle power, high efficiency Mazda lamp. With the larger sizes of multiple gas-filled Mazda lamps, the reduction feature is approximately 90 per cent as contrasted with about 78 per cent for the other Mazda lamps—that is, in comparing the lamps on a horizontal candle power basis for the same candle power in each case, the total light flux of the improved lamp is 90 per cent compared with 78 per cent for the other class. The reports of the earlier installations of multiple lamps have shown widely varying results. With the improvements that have been made in the past few months in obtaining more uniform life performance of gas-filled lamps, as well as that which can be expected in the coming months, the committee feels that there should be no hesitancy in adopting this type of lamp as far as life performance is concerned.

The report is signed by: L. S. Billan (B. & O.), chairman; J. L. Minick (Penn.); H. C. Meloy (L. S. & M. S.); L. Schepmoes (Safety Car Heating & Lighting Co.); D. P. Morrison (P. & L. E.); W. H. Robinson (West. Lamp Co.); P. S. Millar (Elec. Test. Lab.), and C. W. Bender (Nat'l Lamp W'ks.).

SHOP PRACTICE

This year the committee on Shop Practice considered the subject of the electrical equipment of cranes, hoists, transfers and turntables. There is a very strong sentiment in favor of direct current motors for crane and hoist service. This is due not only to the lower maintenance costs of direct current motors, but also to the increasing use of dynamic braking. The most interesting development in connection with transfers and turntables is the operation of tractors instead of mounting the motors on the platform direct. Here, also, preference is given to the direct current motors.

The series wound direct current motor possesses the characteristics which make it ideal for the requirements of overhead crane service. The service requirements are such that crane motors must have a high starting torque, but it also permits the use of motors rated on an intermittent load basis, so it has become customary for most manufacturers to use motors which are really too small for the work.

Of the controllers for crane motors the drum type is preferred by most engineers because of its simplicity, ease of repair, interchangeability of parts, magnetic blow-out, and being enclosed.

Transfers and Turntables.—Where direct current is available it is considered preferable by a large number of shop men for this class of service, and series wound, railway type motors are generally used. If alternating current only is available motors with wound rotors and drum type controllers are generally used, although high torque induction motors have also been tried with some success.

The report is signed by: C. W. Cravens (C. & C. Elec. & Mfg. Co.), chairman.

YARD FACILITIES FOR CHARGING STORAGE BATTERIES

In order to determine the size of generating units for charging storage batteries the number of cars to be charged at one time must be known, the length of time they can be placed for charg-

ing and the approximate amount of charging required. It will be found that abnormal conditions caused by extremely cold weather interruptions to the service, etc., will at times cause a much greater demand and the committee recommended, therefore, an allowance of at least 50 per cent above the normal load. It was also suggested that the dependence for service should not be placed on a single unit, as in case of a breakdown the source of power will be entirely disrupted.

Platforms erected throughout a passenger yard are an economical investment in taking care of the storage batteries so that quick repairs and changes to the batteries and axle generators may be made in the shortest possible time. Electrically-operated trucks of sufficient capacity to carry a 30-volt set of standard car-lighting batteries and of a height to reduce the lift both at the cars and the battery racks to a minimum, was strongly recommended.

The report is signed by: D. B. Pastorius (Penn.), chairman; J. A. Andreucetti (C. & N. W.); E. S. M. MacNab (C. P. R.), and N. H. Keirn.

OTHER BUSINESS

Other reports were presented on Wire Specifications, Standard Rules for Car Wiring, Outside Construction and Yard Lighting, giving detailed information and specifications which are of direct interest to electrical engineers.

The following officers were elected for the ensuing year: President, H. C. Meloy, Lake Shore & Michigan Southern; senior vice-president, E. W. Jansen, Illinois Central; junior vice-president, J. L. Minick, Pennsylvania; secretary-treasurer, Joseph A. Andreucetti, Chicago & North Western.

GERMANY'S INTERRUPTED RAILWAY TRAFFIC.—The Swiss correspondent of an English contemporary, writing from Berne under date of September 1, says of conditions in Germany that "Germany's loss in railway traffic can hardly be estimated. Her railways are now carrying certain goods at reduced rates because if they did not do so German merchants, owing to heavy war risk insurance, would not be able to bring any goods at all on to any neutral market at a price which anyone could afford to pay. The other day the Hamburg Merchants' Association appealed to the government to allow them to carry goods on German railway lines at 50 per cent reduction, because such goods had now to be taken a long and expensive railway journey to a neutral port in order to be shipped."

FINANCIAL RETURNS OF THE MALAY STATES RAILWAYS.—The Federated Malay States Railways' Administration has the control of the railways in the Malay Peninsula (including the Johore State Railways leased since January, 1912), and in the adjacent islands of Penang and Singapore. During 1913 the Singapore Railway (20 miles), which had been leased to the administration from the colonial government as from January, 1912, at a rent of \$150,000, was purchased for \$4,136,000. The total length in operation by the administration is now 771 miles, including 37 miles opened in 1913. In the recently published report it is stated that there was a steady development of railway business during 1913, but comparison with previous periods is difficult, as the expenditure covers a period of 12½ months and the revenue a period of 12 months only. Expenditure was previously dated from December 16 of one year to December 15 of the next, but commencing with the 1913 report it has been decided to include expenditure from January 1 to December 31 of each year to correspond with the period for revenue. This has reduced net profits for 1913 from \$3,050,184.41 to \$2,722,946.41 and the consequent interest on capital from 4.41 per cent. to 3.93 per cent. Gross earnings, including those from motor services, amounted to \$9,548,374, an increase of \$1,127,357, of which \$640,746 came from passengers and \$526,630 from freight and live stock. Apart from the additional \$327,238 due to the change in accounting the expenditure increased by \$758,768. Locomotive fuel was mainly responsible for this increase.

Convention of the Railway Development Association

Ways and Means of Creating Traffic by Improving Farm Production and Promoting Industries are Discussed

The semi-annual convention of the Railway Development Association was held at the Hotel La Salle, Chicago, on November 10 and 11. F. H. LeBaume, agricultural and industrial agent of the Norfolk & Western, presided, and an address of welcome on behalf of the Chicago Association of Commerce was presented by J. D. Shoop. H. H. Gross, president of the National Soil Fertility League, also addressed the convention.

Abstracts of some of the principal papers presented at the meeting are as follows:

PERSONAL WORK WITH FARMERS ON THE SOUTHERN

M. V. Richards, of Washington, D. C., industrial and agricultural commissioner of the Southern and associated lines, discussed the subject of personal work with farmers in part as follows:

The efforts of the railway development man should be for a well-rounded development in the territory his lines cover. While the manufacturing city or district may be developed to the fullest extent with accompanying agricultural development in the nearby regions, it is poor policy to attempt such urban development without the corresponding attempt to advance the interests of the farm. A well sustained and prosperous agricultural community feeds the nearby manufacturing town at the lowest cost and, more than this, it does its part in furnishing efficient labor for industrial establishments.

Nearly all railroads which have maintained industrial departments, have at the same time maintained immigration departments; very often the industrial and immigration work being carried on by the same people. In this way they have sought to build up both the urban and the farm population. Within the last few years, railroad development work has been extended, through direct effort, to reach the farmer already settled in the company's territory and so increase the quantity and quality of farm products and in other ways help the farmer to a better conservation of his land and better returns from his efforts. This, of course, is carrying to the furthest the policy of enlightened selfishness which has been behind so much of the railroad work. During the last few years, the Southern and associated lines have undertaken to carry on to the greatest possible extent a personal work among their farmers, with the idea that the products of our southern lands can be very greatly diversified and that, acre for acre, these lands can be made much more profitable than they ever have been. When the boll weevil first threatened the territory of our company, agents were put into the field under what then was called the "cotton culture department," whose duties were primarily to work with the growers of cotton in an attempt to combat the ravages of the weevil and to overcome, through the diversification of crops, the losses resulting from it. This work has since then been greatly extended.

During the past three years, the Southern and associated lines have carried on, with a force of from fifty to sixty men, direct work with the farmers in their territory, which covered a very large portion of the activities of farm life. This work was carried on through separate departments—the land and industrial department, which had a force of dairy and poultry agents, and also one or two horticultural agents; the department of farm improvement work, with a large force of field agents, who spent their time directly with the farmer; and live stock agents, whose attention was given entirely to the building up of the general live stock industry. This work has now all been consolidated under the industrial and agricultural department of the railroad. The agents working with the farmers, must, of course, first of all, get close to them and obtain their confidence. Our field agents constantly move among the farmers, consulting and advising with them about their crops, helping them in selecting seeds,

advising in regard to the preparation of the soil and its conservation, and in every way doing what they can to secure a better agricultural development. The same method of work has been followed by the livestock and the dairy agents. All of these agents have been preachers of advanced agriculture, and have endeavored to convince the farmer that better methods must be adopted and that these better methods will pay. The work so far has, we believe, been profitable.

In the year 1913, the agents of the department of farm improvement work made demonstrations with 2,409 farmers. By demonstrations, I mean that that number of farmers raised their crops under the direction of these agents, using the methods they advocated. These were generally the same methods advised by the field agents of the United States Department of Agriculture and of other advanced agriculturists. In these demonstrations, 38,256 acres were planted to cotton, 15,755 acres to corn and 4,584 to miscellaneous crops, the entire work covering 58,595 acres. Returns from these acres showed at the end of the season that the average cotton production per acre was 1,130 $\frac{1}{2}$ lb. of seed cotton, which was about twice the average production of the entire territory. The average yield of corn per acre on these fields was 40 13/16 bu., while the average corn yield for all the states covered was only 19 3/10 bu. Individual farmers made as high as 110 bu. of corn to the acre and 2,600 lb. of cotton to the acre, not on single acres only, but on good sized fields. During the winter months these agents turn their attention to personal work among the farmers in consultation regarding coming crops and in holding meetings, in which various farm and crop problems are discussed. Last year 804 of these meetings were held, at which there was a total attendance of 95,721.

Some years ago we began making educational exhibits at local fairs along our lines. These exhibits included demonstrations in dairying, horticulture and domestic science. Through them we were enabled to reach many farmers and their families. We have found that, as a rule, the farmers have welcomed the assistance thus given them and that, outside of those who made demonstrations under our agents, large numbers have used the same crop methods. The work which our field agents are doing is also carried on in the southern states by the county field agents of the Department of Agriculture. Between these agents and our own there has been co-operation, the railroad company endeavoring to cover, so far as possible, fields which the government agents did not reach. It is largely to this personal demonstration work among farmers that acre-corn-crop yields in the southern states are growing larger, and also that there is a steady advancement in the diversification of crops and, therefore, progress in general agriculture.

In the dairy and poultry work, we have maintained a dairy instruction car, which has been constantly at work along our various lines, usually making a stop of a day at a station. At these stops our own agents and state dairy agents have made demonstrations of dairy equipment, delivered lectures on dairy cattle and on the dairy problems which the farmer has had to meet. The agents in their travels have preached the necessity for more attention to dairy cows, to the introduction of first-class stock, the building of silos, good dairy barns and milk houses and proper cleanliness in handling milk. During the past year our agents report the purchase, through their instrumentality, of 1,000 pure-bred bulls, cows and heifers, and 926 grade animals. For the same time, they report the building of 713 silos, 131 modern dairy barns and 48 milk houses, and the establishment of 78 dairies and four creameries.

To some of you this may not appear as a great work. Remember, please, that the South has not heretofore been a dairy

section, except perhaps in two or three isolated places. The silo has almost been an unknown thing, and under our system of devoting the farm to mostly cotton or tobacco, dairy farming has been neglected, notwithstanding the conditions for its success which so largely prevail. The same methods of work have produced like results in the introduction of better grades of beef cattle and increased attention among farmers to general live stock raising. It is evident to anyone who has made a study of the farmers' problems that a great deal of loss has come to farmers in all sections of the country through the inability to properly market farm produce. This has caused many farms to be unprofitable. Our company now maintains a market bureau, with market agents, who work with the grower and the buyer seeking to solve the problem of better markets for our farmers. This bureau has so far been successful.

Personal work among the farmers, whether carried on by the railroad company, the government, local or other associations, is a success, and its results prove that it is a necessity.

IMMIGRATION.

L. J. Bricker, general immigration agent of the Northern Pacific, read a paper on "Securing Desirable Immigration." Some extracts from his paper follow:

If only one person located at some point on our road, though he may have no means, he has to be fed and clothed, and the money expended for this purpose inures to the benefit of the local merchant or tradesman, and some per cent of it reaches the railway company, directly or indirectly. When one of our representatives has induced a farmer to locate in our territory, he has done what will prove to be a lasting benefit to the company. When an immigrant learns that he can get better results in a new field, he informs his friends, and others will follow him later on. A small farm in the eastern or middle states will sell for enough cash to enable the owner to double or treble the acreage in a new country, and still have sufficient cash left for all modern conveniences and utilities.

The desirable foreign settler is the industrious, God-fearing, liberty-loving man, who will readily assimilate and quickly become a loyal American citizen. I believe we still have plenty of room for this type of immigrants. In this connection it seems to me that the work of eliminating the *undesirables* should be done as much as possible on the other side, rather than waiting until they reach our shores.

With reference to our domestic settler—the man who, by his unfailing industry, indomitable courage and will power, has wrested a livelihood for his family from poor and often rocky land—is the man who will make a phenomenal success when located on fertile soil in a congenial climate. That man will not expect a fortune to spring up over night, like Jonah's gourd; but he will patiently and cheerfully await the natural returns from his labors.

The immigration agent, above all else, should possess patience. The agent who, in his eagerness to show results, quickly tries to hustle settlers along his line without taking into consideration whether the settlers in question are at all adapted to that particular territory, is liable to bring his company more grief than prosperity; for one discontented man can do a locality more harm than a ton of advertising matter can do it good, whereas a little time and patience expended in finding out the man's special fitness for certain lines of work, and directing him to the locality best adapted to his needs, would make of him a "booster" instead of a "knocker." In other words, it pays, and pays big, in immigration work, to "make haste slowly" and do your work thoroughly.

DIVERSIFIED FARMING.

Diversified farming and its relation at this time to the cotton grower was discussed by J. C. Clair, industrial and immigration agent of the Illinois Central, and J. F. Jackson, agricultural agent of the Central of Georgia. Mr. Clair said in part:

Today the southern cotton crop will reach upward of 15,000,000 bales and millions of acres of land could be cleared that would produce many more millions of bales. Heretofore cotton has

been as good security as a bank-note. Today, however, with the largest crop ever produced on the southern farmers' land, and produced at the greatest expense, he finds this cotton is without a demand, and while the war continues the crop must be reduced. There has been a campaign of education for the past 10 years for the diversification of crops. Agronomists, business men and industrial men have foreseen the awful plight which the one-crop system would some day bring the south. Only an occasional planter has had the temerity to leave off some cotton and grow fruit on his own farm. Whenever we find a farmer who has been practicing long enough that system of making his farm self-supporting we find a prosperous farmer, but the one crop farmers today are helpless as a result of their folly. Notwithstanding the fact that he has on his hands the largest crop of cotton ever grown, the very prospect of a war or of hard times puts him on the verge of bankruptcy. This shows the false economies of the southern farmer, yet the farmer has not been altogether to blame, for the business man, the banker, the merchant and manufacturer have required the southern farmer to grow crops in order to receive the backing necessary to make the crop, in spite of the adaptability of the country for other crops.

It has been found by actual test on the demonstration farms established by the Illinois Central, which have been under the supervision of three expert agriculturists, that within three years' time we can increase the production of cotton, by diversified farming, 300 per cent from the average production. Take the other great portion of Mississippi and Louisiana, and of the entire cotton growing states, by diversifying their crops—I mean by growing all of the hogs on the farms that are required to feed the men who work that farm; all the cows required to give an abundant supply of milk and butter for the tenants and proprietor to use; all the beef cattle that can be raised upon his worn-out and wasted lands and all the horses or mules that can be used in the farming operations, the planter can still produce as much cotton on one-third of the land formerly cultivated. A highly intelligent and educated class of people will not long grow one crop for all the money they receive in a country that is so well adapted for so many profitable crops. The farmer who grows foodstuffs that are rich in feeding value and who grows his land richer instead of poorer, who makes the greatest and most profitable crop on the most economical basis and leaves the land in better condition to grow a crop next year, is the kind of a farmer that we must look to to develop the South and to put into practice the system of diversified farming, which is going to make the Southland the beacon light of all agricultural sections.

It is my judgment the result of the war now going on across the seas is going to make every southern planter realize to the fullest extent the value of diversified farming, which will place the so-called cotton growing territory of the southern states 10 years ahead in agricultural progress.

Mr. Jackson said in part: The agricultural colleges, the farm demonstration agents, the railroad agricultural departments, and all forces working for better agriculture, now have a greater opportunity than they have ever dared to hope for, to preach the gospel of diversified farming to willing listeners. Many cotton planters who have for years sneered at "book farming methods" are now eager to accept any instructions or assistance offered them. This is particularly noticeable in the increased interest shown by those who visit the Central of Georgia exhibit tent at the state and county fairs this fall. Over our literature table is a sign which reads, "Mr. Cotton Planter, now is the time to consider the importance of legumes, lime, and live stock. Pamphlets free, help yourself." This creates a great deal of comment and demand for the pamphlets on the subjects of better beef cattle, vegetable matter, lime, the boll weevil, reports of test farm work for last year, etc. Expressions such as "We sure need something besides cotton," and "We must grow something we can eat," are frequent. In one of the cases containing products grown on the test farms, with some oats and cow-pea hay is a placard which strikes a popular chord. It reads: "Oats and hay make greater

profits than cotton under normal conditions. On the Central of Georgia test farms in 1913, the double crop made a net profit of \$25.92 an acre, or \$2.51 more than cotton, and cost \$4.06 an acre less to produce." It's a common thing to have a man who reads this, add, "And they're better for the land." Literature and pamphlets will be more effective now than ever before, but real demonstrations of proper farming methods, something the farmer can see with his own eyes, are, as always, the most effective methods of encouraging better farming. While we are very well pleased with the results of our test farm work heretofore, we are confident its effectiveness will be more than doubled next year, and we are having a great many more applications for the establishment of test farms than we can grant.

The present experience of having to trade low-priced cotton for high-priced food will advance several years the date when the farmers of our section will be the most prosperous in the United States, for they will grow at home all of the more important food products for which they have been sending away money to other sections.

RAILWAY TERMINALS

"The Railway Terminal and Its Relation to Industrial Development" was discussed by F. A. Spink, traffic manager of the Chicago & Western Indiana and the Belt Railway of Chicago, who said in part: The railroad terminal was originally looked upon as solely an instrumentality for handling trains and cars in the ordinary dispatch of business. With a change in commercial conditions and the demand for track connection by industries many roads were found hampering their operation by the encroachment of industry tracks in the territory which should have been reserved for transportation uses only. This is a short-sighted policy that results in restricting the operation of the industry and curtailing its scope and possibilities, and in the end defeats the object sought to be gained. Recently a broader vision on the part of railroad managers, coupled with decisions of the Interstate Commerce Commission on the use of terminals by competing lines, has resulted in throwing open for more general use the terminals of the country on the basis of a reasonable charge for use. The day of exclusive terminals is at an end, and in the future we may see the individual road terminals giving place to general locality terminals.

In the Chicago terminal district to-day there are 38 railroads terminating, 24 of them trunk lines, 4 belt lines, and 10 so-called industrial roads. The total single-line mileage of the rails within the Chicago District is said to be 4,000 miles; approximately 1,300 passenger trains enter and depart from this terminal daily carrying something like 200,000 passengers; into and through these terminals are daily hauled 12,000 loaded freight cars and some 10,000 cars are dispatched from it; 15,000 tons of less-than-carload merchandise are brought into Chicago and 10,000 tons sent out each 24 hours. A graphic statement of the movement of cars interchanged between the various roads shows a most bewildering mass of criss-cross lines and the amount of empty engine mileage due to present operating conditions means a waste of hundreds of thousands of dollars per annum. Would not the co-ordination of these terminal facilities and their operation on a more co-operative basis, if not as a separate unity, mean a great saving to the owners in actual cash outlay and to the industries and business of Chicago in improved service and elimination of delays.

In the past little thought was given to the location of industry tracks in such a manner as to offer the least obstruction to operation. As the volume of tonnage has increased this encroachment of industry tracks on main line and yard facilities has become more and more undesirable and troublesome, so that in the evolution of the problem the industry center has come into being bringing about a segregation of industry business, giving better service at less cost and affording both industry and railroads scope to further develop without hampering or being hampered by the transportation uses of the terminal.

Roads with extensive and expensive terminals feel they are in-

adequately compensated for their use by competitors; on the other hand roads without terminal facilities feel they are having an undue burden placed upon them in many instances by the payment of existing terminal charges; and the industries are declaring they are not getting adequate service for the money they are paying.

If the writer may set forth his own personal thought on the subject the solution of the problem would be this, unify all terminals and operate them as a separate facility under separate management. Let the road haul carriers' duty cease at the junction with the terminal. Then, to meet the suggestions of the Interstate Commerce Commission, make the rates apply to and from the terminal, assessing a separate charge for terminal service; or, operate the terminal on a cost basis, preserving the present basis of rate construction. For the present, and for the purposes of this paper, the method of handling the terminal charges is unimportant. The point which it is sought to bring out clearly is the separate and unified operation of the terminals themselves.

THE BANQUET

The semi-annual banquet of the association was held on Tuesday evening at the Hotel La Salle. The speakers were W. L. Park, vice-president of the Illinois Central, and Samuel O. Dunn, editor of the *Railway Age Gazette*. Edith Loring Fullerton, vice-president of the Women's Horticultural and Agricultural Association, also spoke on country home development.

MR. PARK'S ADDRESS

An abstract of Mr. Park's address follows:

The progressive achievement of the American railroads is the greatest industrial achievement in the world's history. There has been, concurrently, with it, a similar achievement in all branches of industry and general development wherever the railroads have reached. Notwithstanding the fact that for more than four hundred years we had reveled in a wealth of natural resources, our agricultural lands, mineral beds and forests were practically untouched before the advent of the railroad.

The Illinois Central followed the Chicago & Northwestern into this city, its charter permitting it to enter along the river, where there was some little prospect of business development. The mayor owned a home on the corner of Madison and Michigan avenue; the waves of Lake Michigan cut up his front yard, and for other reasons the Illinois Central was driven to the marsh on the east side and compelled to protect the city from the lake until the present time at enormous expenditures and great loss of business opportunities. Mark the irony—it is now frequently accused of having stolen the lake front! It is a fact that there was at this time no little speculation as to the benefits of a railroad to the city; there were many prominent people who contended that it would interfere with and retard its prosperity.

Surmounting many obstacles, the railroads gradually increased the mileage. From 1850 to 1870 the Civil War and the period of reconstruction held them back; the next half century witnessed the tremendous achievement of more than 225,000 miles of construction. In the light of subsequent events they were, perhaps, built too fast. The successes were few compared with the opportunities opened up and embraced in all other lines of business. The financial methods necessary at the time to carry on these stupendous undertakings are the subject today of unfair criticism. The people were most willing to vote bonds and offer other strong inducements to secure transportation, knowing they would get it back many times over in the enhancement of their property and increased business. The roads in Great Britain and Continental Europe found a country already made. Those of America were built in advance of its development as they stretched across the plains, over the mountains and through the valleys; they were compelled to create their business by developing the resources of the country.

The first officials who performed the duties you gentlemen are now delegated with were the general superintendent and the

general freight agent. In connection with their other duties they sought out industrial locations, opened up mines, located saw mills, established cattle ranches and packing houses. Immigration was encouraged by low rates, both passenger and freight. By their indomitable energy and perseverance, the tide of empire turned toward the west, to the north, to the south. As the growth of the railroads increased it was necessary to specialize the work of industrial development. Departments were created to expedite this line of railroad activity. But the work of development was never for a moment lost sight of. If, as General Sherman said, an army traveled on its belly the railroad certainly did. It was fed, however, by what it created. Its development agents were alive to every commercial activity that meant present or prospective revenue. The wise builders never lost sight of this essential to their prosperity.

While the opportunity for industrial development is greater than ever before, the most important of all at the present time is unquestionably the scientific use of the soil. Perhaps the most prominent one feature of agricultural development is the reclamation of waste lands. A large percentage of this land cannot be reclaimed by state, corporate or individual effort; the work should be done by the federal government. The United States government promises to take over from the railroads a part at least of the agricultural development work they have so extensively been engaged in. The lever bill, with which you gentlemen are familiar, is one of the most valuable legislative enactments passed by the congress. It is the means by which a scientific agricultural demonstrator can ultimately be placed in every township in this country.

We, as railroad men, are apt to think that our development work is not fully appreciated by the public. I do not take this view. The best asset we have in these troublesome times is our investment in development work. We are hampered, it is true, with unnecessary and unwise laws, rules, regulations and orders from congress and the legislatures, commissions and municipalities. I have the most sanguine expectation that the well-known official efficiency of the railroads will ultimately throw them off where they encumber and profit by that which is needed in such regulation. There can be brought about another era of prosperity similar to that of the decade previous to the present era of "progressiveness" by the thinking public deprecating any attempt to make political capital out of investigations of business methods.

The work you gentlemen are engaged in has been more pleasant than that of some of the other officials who have been compelled to take the brunt of adverse sentiment. You have been continually welcomed in good society; your part of the railroad work is unquestionably universally appreciated; your services are sought after. If there is any turning down of your schemes by the executive officers, you are as much aggrieved as your client. Nevertheless, you must all feel keenly the effect of the present hampering regulations. If you are not moving ahead, you are not moving at all. You must not be discouraged by present conditions. Your work is constructive and the benefits growing out of development work must receive the thanks of posterity. There is a reward in seeing things grow, in the advancement of our commercial interests; the location of industries and the development of new resources are monuments to your energy and efficiency; the obstacles encountered make them the more conspicuous.

OLD AND NEW WAYS OF DEVELOPING TRAFFIC

Mr. Dunn spoke in part as follows: Formerly, the means almost universally employed to get business were solicitation, superior service, rate-cutting or rebating, and new construction. Most of these means of getting business are still in use. But co-operation between the railways themselves, and more especially public opinion and public regulation, have largely destroyed competitive rate-making. Likewise, new railway construction has practically ceased.

While competitive rate-making and railway construction have been declining as means of developing traffic, new and important

means have been developing. Your work is not entirely new in all its phases. But in most of its phases it is new. You are first getting people and industries located on your lines; and then you are doing all you can to make them prosper so that your railways may prosper with them.

That is creative work of the highest order. The railways and the country should rejoice that the old competitive methods are to such a large extent giving way to creative methods. A system under which there would prevail open co-operation between the railways themselves in respect to service and rates; under which creative methods of getting business would be developed in the most varied forms and to the highest degree, and under which government regulation would protect the public in its right to good service at reasonable rates and the railways in their right to fair profits, would be infinitely superior from the standpoint of both the public and the railways, to the old cut-throat system.

We need a revival of new railway construction; I mean of construction in territory not now provided with railways. The construction of this new mileage would attract a larger population into the territories in which it was built; it would increase production in those territories; it would afford traffic not only directly to the new lines, but indirectly to the railways for which they would serve as feeders and to connecting lines throughout the country. The most effective means which could be adopted to cause a revival of new construction would be to make our regulation of railways fairer.

In order that industrial concerns may produce at the least cost and at the highest profit, they must be located as advantageously as practicable with reference to natural resources, supplies of labor, transportation facilities and markets. Who could be better, or even as well, situated to study thoroughly the natural resources and market conditions of a territory and to advertise them, and to advise business men regarding them, than a competent railway industrial agent whose company gave him all the opportunity and facilities needed to carry on such work?

Two of the most important problems confronting the people of this country are that of maintaining a healthy ratio between our urban and rural populations, and that of increasing the output of our farms.

Not only has our farming population not been increasing fast enough; but the efficiency with which those on the farms have worked the acreage under cultivation has left much to be desired. The failure of the growth of the supply of agricultural products to keep pace with the demands for them is the main cause of the general and heavy increase in the cost of living. Continued increases in the value of farm lands and in the wealth of the farmers can be made consistent with the welfare and prosperity of the nation as a whole only if these increases ceased to be caused chiefly by increases in the price of agricultural products, and begin to be caused chiefly by increases in the amounts of corn, wheat, hogs, cattle and so on produced *per acre*.

I do not say that too much of the resources and energies of the traffic departments are used up in the solicitation of business and in the struggle with shippers, with competing lines and with public authorities over the rates charged on existing traffic. But it is certainly as important to develop the largest practicable traffic as to get reasonable rates for transporting it; and after one has surveyed the entire situation in a broad way it would seem that he is apt to conclude that if as much money, energy and thought were devoted to the creation of entirely new traffic as are expended in soliciting and dealing with the rates on existing traffic the results gained would be quite remarkable.

I have no doubt that our railways will adapt their methods of developing traffic as skillfully and effectively to the new conditions as they did to the old, and that if not too much hampered and burdened by government regulation they will be in the future as in the past, the most potent agency in the country for promoting production along all lines and increasing the national prosperity.

OTHER BUSINESS

H. B. Fullerton, director of agricultural development of the Long Island Railroad, presented a paper illustrated with lantern slides on "Ways and Means of Increasing a Railroad's Agricultural Tonnage." An abstract of this paper will be published in a later issue.

F. H. Labaume, agricultural and industrial agent of the Norfolk & Western, read a paper on "Getting City People Back to the Country," which will also be published in abstract form in a later issue.

William Gourlay, of the American Express Company, described some of the plans the express companies are now trying to work out to bring the producer and consumer more closely together and facilitate the marketing of farm products.

R. W. Cooke, industrial agent of the Pennsylvania Lines, presented a paper on "The Effect of War on American Business," which was followed by a general discussion.

Anderson Pace, industrial commissioner of the Chicago Association of Commerce, made an address on the commercial association in its relation to industrial development.

H. M. Bainer, agricultural demonstrator of the Atchison, Topeka & Santa Fe, read a paper on "Personal Work with Farmers on the Santa Fe."

D. G. Mellor, manager of the order, commission and food products department of Wells, Fargo & Company, described methods recently adopted by his company for increasing the returns from farm produce. An abstract of this paper will be published in a later issue.

An exhibit was held in connection with the convention showing photographs and advertising literature which have been used in development work. The members of the association also made an inspection trip through the Chicago terminals on Thursday.

ACCIDENT STATISTICS ON THE PENNSYLVANIA*

By R. H. NEWBURN

Superintendent of the Insurance Department of the Pennsylvania Railroad System

On the Pennsylvania System, employing normally over 225,000 men and carrying over 185 million passengers and with a freight movement exceeding 385 million tons annually, there are 60,000 reports of accidents to employees and 10,000 reports of injuries to passengers and others forwarded to the company's insurance department. In order to simplify the handling of this large number of reports, the Hollerith tabulating machines are used, and items are classified by causes, nature of injuries, occupations, locations, days of disability and other features. As the reports are received they are codified, each item of information being marked with its designated code number and a permanent record of the accident is transferred to a card by means of a punching machine, and when statements or data are needed for the information of the executive or operating department or for the guidance of the safety organization, the cards are sorted by means of machines and the desired information obtained quickly, accurately and economically.

For statistical purposes employees are separated into two classes: one, employees in the maintenance of equipment, commonly known as shopmen, and the other, all other employees, such as trainmen, maintenance of way men, station men, etc., designated as road and yard men.

The statistics show the number killed and injured by—

Detailed causes.
Nature of injury by cause and occupation.
Length of disability.
Occupations.
Length of service.

Time of day or night.
Weather conditions.
Division.
Grand Division.
Shops.
Large stations and yards.

The statistics are compiled on the same basis for shop and

*From an address before the National Council for Industrial Safety at Chicago, October 15.

road and yard accidents, excepting as to detailed causes, there being 360 shop causes and 340 road and yard causes, making 700 separate causes of accidents. The causes in turn are classified under 36 general readings which indicate the nature of the work at the time of the accident.

By comparing the number of accidents under each general heading, we ascertain what kind of work is the most hazardous and the specific cause under which the accidents are reported. The primary cause of every accident is indicated. The records are kept by divisions, shops, stations and yards, and it is, therefore, easily seen at what points any particular kind of accident is most frequent.

There are included in the statistics additional information bearing an important relationship to accident frequency, such as the average age of employees, length of service, etc. Regarding the length of service, it was found that during the year 1913 there were 90,000 new men employed, although the total increase in the number of employees for the year was less than 9,000, the greater number of transient employees being in the maintenance of way department. The statistics developed the fact that during the year 25 per cent of the men killed and injured had less than six months' experience and that 28 men were killed and 2,391 injured who had been in the service less than 30 days. Assuming a similar experience on all the other railroads of the United States, at least 360 men were killed and 15,000 injured last year having less than one month's experience, and many met death during their first week's work—not because they were careless or foolhardy, but because they were ignorant of the hazards of the work.

A business employing men in more than 100 occupations will be unable effectively to teach the doctrine of safety unless some means are provided to discover the number of injuries sustained by men in each specific occupation. The statistics, therefore, are so arranged that the number of injuries and fatalities can be shown in each department and to each occupation of the various departments, also the reports are tabulated to show the specific cause for each occupation.

The number of accidents occurring during each hour of the day or night is shown as the time of the accidents suggests various preventives, such as improved lighting facilities and rearrangement of working hours.

A statement of a certain number of men injured during a certain period does not convey a proper meaning; it is the loss of time that shows what the employee really suffers. Therefore, the statistics provide for the number killed, the number injured, the number of indefinite injuries and the actual number of days lost. Our statistics include all accidents resulting in a disability of one day and over. It was found that 18 per cent of all the injuries involved less than four days' disability, and the number of "15 days or over" accidents (the minimum period covered by liability laws) amounted to 50 per cent of the total days' disability.

Our statistics also show the nature of the injury; this information embodies 141 different kinds of injuries, included under the following general headings:

Amputation	Fractures
Eye Injury	Electrical Shocks
Sprains and Strains	Burns
Bruises	Dislocations
Incised Wound or Laceration	Injuries not included above

This information enables the management to study methods of treatment to reduce the length of disability. Take the subject of fractures for example: There were 758 cases last year resulting in 19,190 days of disablement, 87 indefinite disability cases and 53 fatalities. The medical profession recognizes the necessity for the best treatment of these injuries, as fractures may result in extended disablement on account of improper treatment.

Our experience clearly indicates that comprehensive accident statistics furnish a most effective means of suggesting remedial measures in accident prevention work.

General News Department

Track foremen of the Philadelphia & Reading have been appointed fire wardens by the Pennsylvania State Department of Forestry.

The general offices of the Wabash at St. Louis will be moved from Seventh and Chestnut streets to the Railway Exchange building about December 15.

On the middle division of the Pennsylvania cup vending machines are being installed, to supply passengers with drinking cups at one cent apiece. Hitherto flat, folded cups have been furnished, free; but with the new machines paper cups shaped like common glass tumblers will be furnished.

The Wabash is printing on all of its working timetables a large "Safety Always" emblem and the following in large type: "Safety should be the first consideration of every employee. Every employee should report promptly to his foreman, some member of the safety committee or other proper person, every unsafe condition."

There are 77 men who have worked for the Pennsylvania Railroad 50 years or more and are young enough to be still busily working. Two of them have records of more than 56 years; two others have served 55 years; two, 54 years; seven, 53 years; six, 52 years, and twenty, 51 years. Of the 77 men five are conductors and eight are enginemen.

Four locomotives on the Louisville-St. Louis division of the Southern Railway are to bear the names of the enginemen who run them. The names will be painted in gilt letters, along with the number of the engine. The men who have been thus recognized are Frank Busching, William Hanafee, Robert Greenlaw and Daniel Shine. The requirement for the distinction is 25 years of efficient service.

The Railroad Commission of Georgia, realizing the present serious financial predicament of the railroads, has written a letter to the Southern Railway to the effect that in view of the material decrease in the revenues of carriers the commission, until the present financial situation is relieved, will not impose on any of the roads any expenditures for new stations, warehouses, terminal facilities, etc., except such as are absolutely necessary.

To reduce unnecessary use of the telegraph wires, the Lehigh Valley has extended its censorship of railroad telegrams temporarily to all messages. A carbon copy of every telegram sent by an employee is to be sent immediately to the superintendent of telegraph, in whose office the "censor" will scrutinize every message from every office, from the highest to the lowest. Men who waste words will be advised concerning their uneconomical habit.

Following the election at which the voters of Missouri decisively defeated the full crew bill by referendum vote, the St. Louis & San Francisco announced that its shops at Springfield, Mo., would immediately be placed on a working basis of six days a week and eight hours a day. The main shops have been on a five-day schedule for several months and other shops have been operated only intermittently. Additional men also were given employment.

The golden spike marking the closing of the last gap in the line of the Northwestern Pacific from San Francisco to Eureka, Cal., 283 miles, was driven at Cain Rock Crossing, Cal., 80 miles southeast of Eureka, on October 21, with appropriate ceremonies, and the first through passenger train was run over the line on the same day. Regular service will be started on November 15. The road is owned jointly by the Southern Pacific and the Atchison, Topeka & Santa Fe.

The Baltimore & Ohio, by a circular which has been issued to station employees and others who come in contact with the public, calls attention to the inelegance of using tobacco during working hours. It is believed by the management that a man using tobacco while at work renders inferior service. In larger

stations and behind ticket counters the employees are required to refrain from using tobacco, and the same is also true of passenger trainmen; but the circular is an appeal to personal pride rather than mandatory.

At the safety congress of the National Council for Industrial Safety, held in Chicago on October 14 and 15, there were present from the Chicago & North Western one delegate from each division, terminal shop and local safety committee, all making the trip as the guests of the company, 52 men in all. The delegates have adopted resolutions stating that they obtained much valuable knowledge and information at the meeting, which will be a great help in promoting the safety first work on the North Western; and thanking President Gardner and Vice-President Aishton for arranging the trip.

The United States Civil Service Commission announces an examination, for which applications will be received up to December 1, for the position of examiner of accounts, positions being vacant both in the division of valuation and the division of carriers' accounts, of the Interstate Commerce Commission; salaries from \$1,860 to \$2,100. The commission desires applications from men of large experience in this kind of work. Also, examinations will be held throughout the country, on December 2, for the position of freight rate clerk for the quartermaster of the army, at Chicago; salary \$1,200.

The Buffalo & Susquehanna Railway, extending from Buffalo, N. Y., southeastward to Wellsville, 90 miles, which has announced that business will be suspended on December 1 because of insufficient income to keep the road in operation, may possibly be bought by the Lackawanna Steel Company, which owns the South Buffalo Railway. It is reported that a fair offer has already been made. A recent decision of the Interstate Commerce Commission has removed doubts as to whether the South Buffalo Railway could be classed as a common carrier or was only a plant facility. The commission holds that it is a common carrier.

The National Transcontinental Railway, over which trains are running from Moncton, N. B., northwest to Escourt, 56 miles beyond Edmundston, is shortly to be put in operation between Moncton and Levis, opposite Quebec. Trains between Moncton and Escourt are operated by the Intercolonial, and the Intercolonial will manage the extended service. The whole of the National Transcontinental is now finished, so as to be ready for use, but the arrangement by which the Grand Trunk Pacific was to operate the road appears to have encountered some obstacle. According to the Toronto World, the line west of Levis is likely not to be put in use until next spring.

H. K. Gilbert, well known in the railway and supply business in Chicago, has just returned from a year's traveling in Europe and England. While in England this summer, he had an unusual experience for a railway supply man. On account of his familiarity with organization problems his services were availed of by the Medical Service Corps of the British Army in the recruiting department, and afterward in connection with the visiting of wounded, etc., at base hospitals. Mr. Gilbert was for several years vice-president of the Sargent Company, which later was merged in the American Brake Shoe & Foundry Company, and also for a number of years, vice-president of the Buda Company.

President Wilson has awarded a medal of honor to W. A. Holley, of Greenville, Tex., for saving the life of Mrs. Sallie Griffin, on the Missouri, Kansas & Texas Railway of Texas at Greenville. The lady became confused or did not realize the danger, and started across a main track at Greenville station directly in front of an approaching train. Switchman Holley was standing near the building, and, realizing that Mrs. Griffin had no time to cross the track, ran forward, lifted her bodily, and carried her out of danger. He was struck by the hand railing on the front end of the engine, but neither he nor Mrs. Griffin

was injured. This is the fifteenth medal of honor which has been bestowed under the Act of February 23, 1905.

In Louisiana, the special trains bearing traveling teachers who give instruction in agriculture and in "safety-first" are not allowed a complete monopoly of the railway-social-service news columns; there is a third propaganda, Instruction in Hygiene. Dr. Oscar Dowling, president of the Louisiana state board of health and his "Health on Wheels" train has been noticed heretofore in these columns; and now it appears that the doctor is extending his activities into other states. The Birmingham (Ala.) Herald says that he is to appear in that city with his exhibit, remaining throughout one day. He has displays in his car classified under four heads; namely, Prevention of Disease; Food Products; Community Hygiene, and Care of the Baby and School Hygiene.

Those independent conductors of the St. Louis Southwestern were successful in their application to the court, at St. Louis, for an injunction forbidding the brotherhood to call a strike on that road; and the injunction is directed against three brotherhoods; those of the conductors, the brakemen and the firemen. The judge said that the injunction did not prevent the unions from taking a strike vote. The threat of a strike was made because the railroad company refused to reinstate a conductor, dismissed because of intoxication, when the brotherhood claimed that the charge against the conductor was unfounded. Press despatches of November 9, telling of the granting of the injunction, say that the brotherhood had accepted mediation, as asked for by the railroad company, but that the mediators have not yet finished their work.

Credit for Saving Scrap

Bulletins telling of specially meritorious acts on the part of employees have an added interest where the persons named in them are known; and the smaller the territory covered by a bulletin, the more likely are the employees generally to recognize the names published. W. T. Lechlider, superintendent of the Cleveland division of the Baltimore & Ohio, issues bulletins, once a month, or as often as may be found desirable, which are confined to happenings on his own division. One of the things noted in a recent bulletin was the commendation of a baggage master for making neat and comprehensive reports. The station forces at three places, and a dozen individual trainmen and section foremen were commended for saving scrap, the value of which, in two weeks, amounted to \$218.

Northern Pacific Efficiency Bureau

On the Northern Pacific the promotion of what is commonly called the "safety-first" habit is in the hands of the "Bureau of Efficiency," of which a special representative of the first vice-president is the chief officer. The organization of this bureau was noted in the *Railway Age Gazette* of January 24, 1913; and in the issue of December 19, 1913, page 1196, some of the doings of the bureau during the year then ending were briefly noted.

In a sketch of the activities of the bureau for the year 1913, which was prepared by Mr. Banks, the officer in charge of the bureau, but which has only recently been made public, 38 subjects are deemed of sufficient importance to be specially mentioned; and up to December 4, 1913, about 80 circular letters had been sent out to the division superintendents calling attention to dangerous conditions or practices.

In the removal of dangerous or objectionable structures at the side of the tracks, marked improvement was made. A standard card was adopted for use in giving authority to yard engines to enter on a repair track, the card to be issued by the repair man. A new blue flag device was adopted. A standard squirt hose and connections, adopted early in the year, will prevent many scalding accidents. An improved bar for shaking locomotive grates has been adopted. The railings of cabooses have been made safer and each caboose will have a permanent air-brake valve and whistle at each end, making a back-up hose unnecessary. New tank spout ropes were provided throughout the company's lines, where needed. A superior grade of tool handles has been made standard. Turntables have been floored

at the ends with plank the height of the rail, thus removing the danger of shearing off a man's foot between the rails on the table and the rails on the circle. The standard clearance of switch stands has been changed from 6 ft. to 7 ft. from the rail.

The standard clearance for company's buildings has been made 12 ft. from the track; where this distance cannot be obtained doors of such buildings must be in the end or the back side and not open toward the track. Gravel has been filled in around trunking used in connection with signals, so that workmen will be less liable to stumble over the trunking. A standard brake club has been designed. Torpedoes are now made with red tops so that they will be more surely seen, especially by employees using hand cars. The walls of turntable pits are being whitewashed so that the men will be less likely to walk into them.

The doors of shelters for crossing flagmen are being changed so as to open toward the street and not toward the track. An order has been issued forbidding the use or occupancy of kitchen cars when such cars are being moved; cooks and helpers must ride in cabooses or on passenger trains. Superintendents are required to pay personal attention to the location of poles belonging to telephone and other outside companies, so as to prevent the setting of these poles where they will obscure fixed signals.

Fewer Mules in Mines

The anthracite coal operators of Pennsylvania report that in the last decade, from 1902 to 1912, the horse power developed at the mines increased from 354,237 to 680,700, or 326,463 horse power; but electric power is used and the number of mules in the mines has fallen off. A good mule is now worth \$240. If this 326,463 additional horse power had been added in mules, supposing such a number obtainable, the investment since 1902 in power alone would have been nearly \$80,000,000, without replacing any mules that died during that period. As a matter of fact, the number of mules decreased from 16,139 in 1902 to 15,187 in 1912. On the other hand the number of electric locomotives increased from 53 to 951, and the number of steam locomotives (on the surface) from 373 to 575. Steam and electricity are saving millions of dollars annually.

But the increase in other necessary forms of energy makes the problem of operating the mines at a profit one of careful selection of the most economical means. In 1912 the consumption of powder was 41,401,015 lb., and of dynamite 13,685,062. There has been since 1903 an increase of over 9,000,000 lb. of explosives used, an increase wholly disproportionate to the amount of coal produced, due mainly to the great amount of rock work which now has to be done.

A Dishonest Claim Agent Punished

In the United States District Court at Baltimore last week, George Elmer Long was convicted on five counts of defrauding the Baltimore & Ohio Railroad by bogus claims paid by Long while in the employ of the road. Long will serve three years in the federal penitentiary at Atlanta. He entered the employ of the Baltimore & Ohio about three years ago as a claim adjuster in the freight department, having had previous experience with southern roads. For some time after securing the position he was establishing himself in the confidence of superiors, after which, through the medium of confederates, a scheme of filing fraudulent claims was undertaken. The accomplices represented themselves as shipping concerns and made claims for losses or damage to shipments never shipped, and others which were shipped and contained only junk. In his confession Long admitted shipping four boxes as the property of different concerns. In most instances, however, no shipment was even made, the plan having been that where legitimate claims were adjusted the waybills were stolen and changed to cover shipments to firms existing only in the minds of the gang and on the stationery which they used. The claims varied usually in amounts ranging from \$200 to \$500. Long was tracked by Edmund Leigh, chief of the railroad detective force, the chase having been conducted in Pittsburgh, Niagara Falls, Hamilton, Chicago and Detroit. Long was arrested in Detroit while calling for mail at the post office.

MEETINGS AND CONVENTIONS

The following list gives names of secretaries, dates of next or regular meetings, and places of meeting.

- AIR BRAKE ASSOCIATION.**—F. M. Nellis, 53 State St., Boston, Mass. Next convention, May 4-7, 1915, Hotel Sherman, Chicago.
- AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.**—A. G. Thomason, Demurrage Commissioner, Boston, Mass. Annual convention, April, 1915, Richmond, Va.
- AMERICAN ASSOCIATION OF DINING CAR SUPERINTENDENTS.**—H. C. Boardman, D. L. & W., Hoboken, N. J. Next meeting, October, 1915.
- AMERICAN ASSOCIATION OF FREIGHT AGENTS.**—R. O. Wells, Illinois Central, East St. Louis, Ill. Annual meeting, May 21-24, 1915, Richmond, Va.
- AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICIALS.**—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York.
- AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.**—E. H. Harman, Room 101, Union Station, St. Louis, Mo. Next meeting, May 20-21, 1915, San Francisco, Cal.
- AMERICAN ELECTRIC RAILWAY ASSOCIATION.**—E. B. Burritt, 29 W. 39th St., New York. Annual convention, October, 1915, San Francisco, Cal.
- AMERICAN ELECTRIC RAILWAY MANUFACTURERS' ASSOCIATION.**—H. C. McConaughy, 165 Broadway, New York. Meetings with American Electric Railway Association.
- AMERICAN RAILROAD MASTER TINNERS, COPPERSMITHS AND PIPEFITTERS' ASSOCIATION.**—W. E. Jones, C. & N. W., 3814 Fulton St., Chicago. Annual meeting, Chicago.
- AMERICAN RAILWAY ASSOCIATION.**—W. F. Allen, 75 Church St., New York. Semi-annual meeting, November 18, The Blackstone, Chicago.
- AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.**—C. A. Lichty, C. & N. W., Chicago. Next convention, October 19-21, 1915, Detroit, Mich.
- AMERICAN RAILWAY ENGINEERING ASSOCIATION.**—E. H. Fritch, 900 S. Michigan Ave., Chicago. Next convention, March 16-18, 1915, Chicago.
- AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.**—J. W. Taylor, 1112 Karpen Bldg., Chicago. Annual meeting, June 9-11, 1915, Atlantic City, N. J.
- AMERICAN RAILWAY SAFETY ASSOCIATION.**—L. F. Shedd, C. R. I. & P., Chicago. Next meeting, November 10, Chicago.
- AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.**—A. R. Davis, Central of Georgia, Macon, Ga. Annual meeting, July, 1915.
- AMERICAN SOCIETY FOR TESTING MATERIALS.**—Prof. E. Marburg, University of Pennsylvania, Philadelphia, Pa.
- AMERICAN SOCIETY OF CIVIL ENGINEERS.**—Chas. W. Hunt, 220 W. 57th St., New York. Regular meetings, 1st and 3d Wednesday in month, except June, July and August, 220 W. 57th St., New York.
- AMERICAN SOCIETY OF ENGINEERING CONTRACTORS.**—J. R. Wemlinger, 11 Broadway, New York. Regular meetings, 2d Thursday in month, at 2 P. M., 11 Broadway, New York.
- AMERICAN SOCIETY OF MECHANICAL ENGINEERS.**—Calvin W. Rice, 29 W. 39th St., New York. Annual meeting, December 1-4, 1914, New York.
- AMERICAN WOOD PRESERVERS' ASSOCIATION.**—F. J. Angier, B. & O., Mt. Royal Sta., Baltimore, Md. Next convention, January 19-21, 1915, Chicago.
- ASSOCIATION OF AMERICAN RAILWAY ACCOUNTING OFFICERS.**—E. R. Woodson, 1300 Pennsylvania Ave., N. W., Washington, D. C. Annual convention, April 28, 1915, Atlanta, Ga.
- ASSOCIATION OF MANUFACTURERS OF CHILLED CAR WHEELS.**—George W. Lyndon, 1214 McCormick Bldg., Chicago.
- ASSOCIATION OF RAILWAY CLAIM AGENTS.**—C. W. Egan, B. & O., Baltimore, Md. Annual meeting, third week in May, 1915, Galveston, Tex.
- ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.**—Jos. A. Andreucetti, C. & N. W., Room 411, C. & N. W. Sta., Chicago. Annual meeting, October, 1915.
- ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.**—P. W. Drew, Soo Line, 112 West Adams St., Chicago. Annual meeting, June 22-25, 1915, Rochester, N. Y.
- ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.**—G. P. Conard, 75 Church St., New York. Next meeting, December 8-9, Richmond, Va.
- BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.**—L. D. Mitchell, Detroit Graphite Co., Chicago, Ill. Meetings with American Railway Bridge and Building Association.
- CANADIAN RAILWAY CLUB.**—James Powell, Grand Trunk, P. O. Box 7, St. Lambert (near Montreal), Que. Regular meetings, 2d Tuesday in month, except June, July and August, Windsor Hotel, Montreal, Que.
- CANADIAN SOCIETY OF CIVIL ENGINEERS.**—Clement H. McLeod, 176 Mansfield St., Montreal, Que. Regular meetings, 1st Thursday in October, November, December, February, March and April. Annual meeting, January, Montreal.
- CAR FOREMEN'S ASSOCIATION OF CHICAGO.**—Aaron Kline, 841 Lawler Ave., Chicago. Regular meetings, 2d Monday in month, except July and August, Lytton Bldg., Chicago.
- CENTRAL RAILWAY CLUB.**—H. D. Vought, 95 Liberty St., New York. Regular meetings, 2d Friday in January, May, September and November. Annual meetings, 2d Thursday in March, Hotel Statler, Buffalo, N. Y.
- ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.**—Elmer K. Hiles, 2511 Oliver Bldg., Pittsburgh, Pa. Regular meetings, 1st and 3d Tuesday, Pittsburgh.
- FREIGHT CLAIM ASSOCIATION.**—Warren P. Taylor, R. F. & P., Richmond, Va. Annual meeting, June 16, 1915, Chicago.
- GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.**—A. M. Hunter, 321 Grand Central Station, Chicago. Regular meetings, Wednesday, preceding 3d Thursday in month, Room 1856, Transportation Bldg., Chicago.
- INTERNATIONAL RAILWAY CONGRESS.**—Executive Committee, 11, Rue de Louvain, Brussels, Belgium. Next convention, June 23 to July 6, 1915, Berlin.
- INTERNATIONAL RAILWAY FUEL ASSOCIATION.**—C. G. Hall, C. & E. I., 922 McCormick Bldg., Chicago. Annual meeting, May 17-20, 1915, Chicago.
- INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.**—Wm. Hall, 829 W. Broadway, Winona, Minn. Next convention, July 14-17, 1915, Sherman House, Chicago.
- INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.**—A. L. Woodworth, C. H. & D., Lima, Ohio. Annual meeting, August 17, 1915, Philadelphia, Pa.
- MAINTENANCE OF WAY AND MASTER PAINTERS' ASSOCIATION OF THE UNITED STATES AND CANADA.**—T. I. Goodwin, C. R. I. & P., Eldon, Mo. Next convention, November 17-19, 1914, Detroit, Mich.
- MASTER BOILER MAKERS' ASSOCIATION.**—Harry D. Vought, 95 Liberty St., New York. Annual convention, May 26 to 28, 1915, Chicago, Ill.
- MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOCIATION OF THE UNITED STATES AND CANADA.**—A. P. Dane, B. & M., Reading, Mass. Next convention, September 14-17, 1915, Detroit, Mich.
- MASTER CAR BUILDERS' ASSOCIATION.**—J. W. Taylor, 1112 Karpen Bldg., Chicago. Annual meeting, June 14-16, 1915, Atlantic City, N. J.
- NATIONAL RAILWAY APPLIANCES ASSOCIATION.**—Bruce V. Crandall, 537 So. Dearborn St., Chicago. Next convention, March 15-19, 1915, Chicago.
- NEW ENGLAND RAILROAD CLUB.**—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, 2d Tuesday in month, except June, July, August and September, Boston.
- NEW YORK RAILROAD CLUB.**—Harry D. Vought, 95 Liberty St., New York. Regular meetings, 3d Friday in month, except June, July and August, 29 W. 39th St., New York.
- NIAGARA FRONTIER CAR MEN'S ASSOCIATION.**—E. Frankenberger, 623 Brisbane Bldg., Buffalo, N. Y. Meetings monthly.
- PEORIA ASSOCIATION OF RAILROAD OFFICERS.**—M. W. Rotchford, Union Station, Peoria, Ill. Regular meetings, 2d Thursday in month, Jefferson Hotel, Peoria.
- RAILROAD CLUB OF KANSAS CITY.**—C. Manlove, 1008 Walnut St., Kansas City, Mo. Regular meetings, 3d Friday in month, Kansas City.
- RAILROAD MASTER TINNERS, COPPERSMITHS AND PIPEFITTERS' ASSOCIATION.**—U. G. Thompson, C. & E. I., Danville, Ill. Annual meeting, May, 1915.
- RAILWAY BUSINESS ASSOCIATION.**—Frank W. Noxon, 30 Church St., New York. Annual meeting, December 10, 1914, Waldorf-Astoria Hotel, New York.
- RAILWAY CLUB OF PITTSBURGH.**—J. B. Anderson, Room 207, P. R. R. Sta., Pittsburgh, Pa. Regular meetings, 4th Friday in month, except June, July and August, Monongahela House, Pittsburgh.
- RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.**—J. Scribner, 1021 Monadnock Block, Chicago. Meetings with Association of Railway Electrical Engineers.
- RAILWAY FIRE PROTECTION ASSOCIATION.**—C. B. Edwards, Fire Ins. Agt., Mobile & Ohio, Mobile, Ala. Next meeting, October, 1915.
- RAILWAY SIGNAL ASSOCIATION.**—C. C. Rosenberg, Times Bldg., Bethlehem, Pa. Next meeting, March 15, 1915, Chicago. Annual meeting, September 21-24, 1915, Salt Lake City, Utah.
- RAILWAY STOREKEEPERS' ASSOCIATION.**—J. P. Murphy, L. S. & M. S., Box C, Collinwood, Ohio. Annual meeting, May 17-19, 1915, Hotel Sherman, Chicago.
- RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.**—J. D. Conway, 2136 Oliver Bldg., Pittsburgh, Pa. Meetings with Master Car Builders and Master Mechanics Associations.
- RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.**—G. A. Nelson, 50 Church St., New York. Meetings with Association of Railway Telegraph Superintendents.
- RICHMOND RAILROAD CLUB.**—F. O. Robinson, C. & O., Richmond, Va. Regular meetings, 2d Monday in month, except June, July and August.
- ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.**—L. C. Ryan, C. & N. W., Sterling, Ill. Annual meeting, September 14-16, 1915, Chicago.
- ST. LOUIS RAILWAY CLUB.**—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August, St. Louis.
- SALT LAKE TRANSPORTATION CLUB.**—R. E. Rowland, Hotel Utah Bldg., Salt Lake City, Utah. Regular meetings, 1st Saturday of each month, Salt Lake City.
- SIGNAL APPLIANCE ASSOCIATION.**—F. W. Edmunds, 3868 Park Ave., New York. Meeting with annual convention Railway Signal Association.
- SOCIETY OF RAILWAY FINANCIAL OFFICERS.**—Carl Nyquist, C. R. I. & P., La Salle St. Sta., Chicago. Annual meeting, September, 1915.
- SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.**—E. W. Sandwich, A. & W. P. R. R., Atlanta, Ga. Next regular meeting, January 21, 1915, Atlanta, Ga.
- SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.**—A. J. Merrill, Grant Bldg., Atlanta, Ga. Regular meetings, 3d Thursday, January, March, May, July, September, November, 10 A. M., Candler Bldg., Atlanta.
- TOLEDO TRANSPORTATION CLUB.**—Harry S. Fox, Toledo, Ohio. Regular meetings, 1st Saturday in month, Boddy House, Toledo.
- TRACK SUPPLY ASSOCIATION.**—W. C. Kidd, Ramapo Iron Works, Hillburn, N. Y. Meetings with Roadmaster's and Maintenance of Way Association.
- TRAFFIC CLUB OF CHICAGO.**—W. H. Wharton, La Salle Hotel, Chicago.
- TRAFFIC CLUB OF NEW YORK.**—C. A. Swope, 291 Broadway, New York. Regular meetings last Tuesday in month, except June, July and August, Waldorf-Astoria, New York.
- TRAFFIC CLUB OF PITTSBURGH.**—D. L. Wells, Erie R. R., Pittsburgh, Pa. Meetings bimonthly, Pittsburgh. Annual meeting, 2d Monday in June.
- TRAFFIC CLUB OF ST. LOUIS.**—A. F. Versen, Mercantile Library Bldg., St. Louis, Mo. Annual meeting in November. Noonday meetings October to May.
- TRAIN DESPATCHERS' ASSOCIATION OF AMERICA.**—J. F. Mackie, 7122 Stewart Ave., Chicago. Annual meeting June 15, 1915, Minneapolis, Minn.
- TRANSPORTATION CLUB OF DETROIT.**—W. R. Hurley, Superintendent's office, L. S. & M. S., Detroit, Mich. Meetings monthly, Normandie Hotel, Detroit.
- TRAVELING ENGINEERS' ASSOCIATION.**—W. O. Thompson, N. Y. C. & H. R., East Buffalo, N. Y. Annual meeting, September, 1915, Chicago.
- WESTERN CANADA RAILWAY CLUB.**—W. H. Rosevear, P. O. Box 1707, Winnipeg, Man. Regular meetings, 2d Monday, except June, July and August, Winnipeg.
- WESTERN RAILWAY CLUB.**—J. W. Taylor, 1112 Karpen Bldg., Chicago. Regular meetings, 3d Tuesday in month, except June, July and August, Karpen Bldg., Chicago.
- WESTERN SOCIETY OF ENGINEERS.**—J. H. Warder, 1735 Monadnock Block, Chicago. Regular meetings, 1st Monday in month, except January, July and August, Chicago. Extra meetings, except in July and August, generally on other Monday evenings.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF SEPTEMBER, 1914

Name of road	Average mileage operated during period.			Operating revenues—			Maintenance of way and structures, equipment.			Operating expenses—			Net operating revenue (or deficit).	Railway tax, railroads.	Operating income (or loss).	Increase (or decrease) comp'd with last year.			
	Freight.	Pasenger.	Total inc. misc.	Traffic.	Transportation.	Miscellaneous.	General.	Total.	(or deficit).										
Alabama & Vickburg.....	143	\$83,757	\$39,256	\$21,420	\$2,445	\$116,582	\$3,894	\$5,595	\$115,036	\$7,240	\$12,037	\$12,037	\$12,037	\$12,037	\$12,037	\$12,037			
Alabama Great Southern.....	309	278,019	94,734	407,422	58,981	116,582	1,466,993	2,525	136,005	9,983	338,027	15,493	53,896	53,896	53,896	53,896	53,896		
Atlanta, Topeka & Santa Fe.....	8,470	6,197,113	2,031,055	8,972,243	1,314,208	2,308,397	16,687	2,525	164,672	5,407,649	3,565,594	399,106	1,644,419	512,626	512,626	512,626	512,626	512,626	
Atlanta, West Point & Atlantic.....	93	50,286	35,853	98,762	16,687	23,060	5,314	30,155	1,464	4,304	80,984	18,278	7,125	11,150	11,150	11,150	11,150	11,150	
Atlanta, Birmingham & Atlantic.....	646	145,083	45,009	205,494	35,150	44,999	11,916	99,632	.....	9,781	201,484	8,010	14,337	6,327	6,327	6,327	6,327	6,327
Atlantic & St. Lawrence.....	167	60,219	16,164	106,687	16,386	4,187	2,445	113,897	103	2,574	4,328	8,293	10,800	—5,507	—5,507	—5,507	—5,507	—5,507	
Atlantic City Line.....	170	21,219	167,479	245,421	28,111	26,705	2,445	893,187	103	1,006	172,337	73,085	13,500	59,567	12,849	12,849	12,849	12,849	
Atlantic Coast Line.....	4,664	1,425,579	601,311	2,186,558	445,958	475,023	6,795	81,713	203	6,765	146,206	230,351	263,180	2,363,925	—38,143	—38,143	—38,143	—38,143	
Baltimore & Ohio System.....	4,516	6,784,553	1,372,332	8,782,332	906,225	1,684,913	156,993	3,145,556	49,224	205,391	6,148,203	2,634,129	24,466	19,021	24,466	24,466	24,466	24,466	
Baltimore & Ohio Chicago Terminal.....	80	.....	592	151,412	16,111	26,703	918	57,639	2,119	4,433	107,924	43,487	19,021	—719	—719	—719	—719	—719
Belt, Ry. Co. of Chicago.....	631	207,729	65,964	289,645	48,502	46,901	2,431	84,803	1,204	9,839	198,877	144,455	10,458	87,750	18,228	18,228	18,228	18,228	
Bessinger & Lake Erie.....	24	1,114,537	50,167	1,179,904	73,954	149,935	9,532	206,834	2,633	1,016	20,554	447,762	732,143	1,238	53,955	—61,988	—61,988	—61,988	
Birmingham & Garifield.....	27	1,781,83	3,500	12,617	12,617	12,617	480	29,298	.....	3,660	76,444	1,081	1,315	2,069	—38,257	—38,257	—38,257	—38,257
Boston & Maine.....	43	43,631	1,106	4,277,688	782,595	61,1706	39,943	1,727,002	18,281	88,544	3,268,070	1,009,618	161,570	1,570	848,048	13,324	13,324	13,324	13,324
Buffalo & Susquehanna R. R. Corporation.....	2,252	1,121,109	7,028	1,22,142	18,610	40,173	10,705	536	12,522	3,34	2,288	32,136	4,911	2,600	1,111	1,111	1,111	1,111	
Buffalo, Rochester & Pittsburgh.....	586	729,546	108,150	27,225	6,050	19,381	10,705	136,777	193,581	10,161	269,091	288,551	20,000	218,850	—109,301	—109,301	—109,301	—109,301	
Canadian Pacific Lines in Maine.....	233	56,308	21,178	87,171	20,217	14,173	5,892	36,662	.....	3,524	80,469	3,702	12,000	8,298	17,422	17,422	17,422	17,422
Carolina, Clinchfield & Ohio S. C.....	248	175,265	16,969	197,287	15,753	23,004	6,969	35,995	.....	8,740	89,531	107,755	14,250	93,505	—29,993	—29,993	—29,993	—29,993
Carolina, Clinchfield & Ohio of S. C.....	18	9,136	1,381	10,680	63,704	38,611	1,001	106,906	.....	4,044	5,302	5,302	5,302	4,628	—2,548	—2,548	—2,548	—2,548
Central New England.....	304	272,336	46,489	332,735	63,744	165,501	196,198	34,382	1,196	33,340	214,207	118,534	4,000	107,501	—36,888	—36,888	—36,888	—36,888	
Central of Georgia.....	1,924	622,635	202,253	975,442	165,501	196,198	165,501	393,540	14,902	49,175	1,296,103	1,129,276	126,781	1,002,495	—17,734	—17,734	—17,734	—17,734	
Central of New Jersey.....	678	1,991,842	590,978	2,725,378	242,223	393,540	36,778	859,674	1,497	6,393	273,228	78,068	15,760	62,308	23,408	23,408	23,408	23,408	
Central Vermont.....	411	228,237	98,470	351,296	51,624	57,416	5,987	148,781	3,027	4,022	124,135	4,022	5,000	12,676	—16,677	—16,677	—16,677	—16,677	
Cheapeake & Ohio Lines.....	341	101,293	27,369	123,731	30,797	32,731	3,879	52,706	22,145	6,022	67,961	2,391,370	1,122,774	109,922	1,012,619	62,126	62,126	62,126	
Chicago & Alton.....	3,367	2,788,818	567,575	3,514,144	423,729	733,822	57,725	1,085,939	2,372,445	3,340	2,391,370	1,122,774	1,122,774	44,850	327,547	—503	—503	—503	
Chicago & Eastern Illinois.....	1,028	819,977	385,183	1,307,854	146,166	263,423	35,143	10,689	1,204	1,047	935,112	2,722,445	940,803	336,864	225,867	113,742	113,742	113,742	
Chicago & Erie.....	270	432,161	53,013	530,161	86,401	1,627,732	1,116,015	19,585	222,741	2,183	11,607	2,526,204	53,164	12,895	540,269	564,697	564,697	564,697	
Chicago, Burlington & Quincy.....	8,105	2,077,236	1,027,910	8,030,464	1,27,282	1,173,147	1,173,147	1,173,147	2,57,627	53,603	142,126	2,774,260	375,000	3,378,386	3,378,386	23,050	23,050	23,050	
Chicago, Detroit & Toledo.....	9,264	5,891,332	1,979,728	8,579,305	946,244	1,366,030	144,913	2,494,492	70,585	1,975	5,191,806	3,377,499	3,377,499	3,054,971	—110,290	—110,290	—110,290	—110,290	
Chicago, Great Western.....	427	50,327	10,849	12,617	12,617	12,617	1,204	1,282	1,282	1,282	1,282	1,282	1,282	1,282	2,249	2,249	2,249	2,249	
Chicago, Rock Island & Pacific.....	7,852	1,703,120	663,102	947,636	1,027,106	142,243	2,354,176	43,638	130,550	4,641,253	1,989,774	284,033	1,705,409	197,100	197,100	197,100	197,100	197,100	
Chicago, St. Paul, Minn. & Omaha.....	1,753	1,075,329	510,172	1,698,869	272,429	206,904	28,884	563,909	15,638	1,123,610	55,260	95,492	4,472,435	4,472,435	7,932	7,932	7,932	7,932	
Chicago, Terre Haute & Southern.....	375	183,295	160,434	323,711	125,756	125,756	3,064	18,887	934	1,156,974	49,460	11,500	40,920	66,116	66,116	66,116	66,116	66,116	
Cincinnati, Hamilton & Dayton.....	1,015	682,717	156,668	939,903	125,756	125,756	16,972	382,405	1,204	1,204	69,335	24,568	40,920	20,519	20,519	20,519	20,519	20,519	
Cincinnati, New Orleans & Texas Pacific.....	337	580,079	146,997	246,405	77,157	90,881	248,165	25,024	7,720	22,540	640,814	134,343	31,000	103,343	—167,057	—167,057	—167,057	—167,057	
Cincinnati, Northern, Cincinnati, Chicago & St. L.....	2,361	2,287,709	790,612	3,369,280	197,582	205,468	10,515	605,024	23,915	57,101	2,344,805	1,024,475	130,000	89,166	39,891	39,891	39,891	39,891	
Colorado Midland.....	1,127	513,869	144,994	703,447	98,582	154,289	7,518	73,322	1,113	5,373	1,210,144	33,625	14,325	—4,373	—4,373	—4,373	—4,373	—4,373	
Cumberland Valley.....	333	166,744	166,744	327,451	37,451	37,451	4,172	95,320	762	8,890	183,653	89,342	5,910	83,432	—4,188	—4,188	—4,188	—4,188	
Delaware, Lackawanna & Western.....	960	2,697,268	807,284	3,857,125	465,707	620,960	67,847	1,099,904	34,227	74,172	2,337,168	1,519,957	185,000	1,334,847	87,587	87,587	87,587	87,587	
Denver & Rio Grande.....	2,562	1,646,428	502,812	2,288,362	166,733	166,733	17,682	2,489	5,152	62,460	32,420	61,386	3,366	10,574	—31,281	—31,281	—31,281	—31,281	
Denver & Salt Lake.....	255	124,496	32,923	166,733	12,241	15,685	1,783	33,905	2,147	4,107	10,993	210,583	209,919	5,000	5,000	5,000	5,000	5,000	
Detroit & Mackinac.....	400	64,013	25,947	96,013	96,013	96,013	1,525	33,822	.....	2,595	67,441	62,132	5,900	56,232	—6,056	—6,056	—6,056	—6,056
Detroit & Toledo Shore Line.....	79	129,229	.....	128,552	21,709	21,709	7,790	1,525	.....	2,595	20,753	14,044	3,366	10,574	—31,281	—31,281	—31,281	—31,281
Detroit, Grand Haven & Milwaukee.....	191	118,000	72,000	221,797	14,723	14,723	8,144	116,700	972										

REVENUES AND EXPENSES OF RAILWAYS

2014 Commencement

Traffic News

A single shipment of 3,000,000 eggs from western states was exported to England from Boston last week. The reduction in England's egg supply from Russia on account of the war is said to have brought about the shipment.

The committee on relations between railroads of the American Railway Association reports that on November 1, 1914, the total freight car surplus was 172,325, as compared with 154,342 on October 15. The total shortage was 2,229 cars.

Of 2,457 passenger trains run on the New York, New Haven & Hartford in the last two weeks of July, 1914, five had earnings of only one cent a mile; 88 earned ten cents a mile or less; 619 earned fifty cents a mile or less, and more than half of the whole (52.1 per cent) earned one dollar a mile or less. Only 22.7 per cent of the trains showed earnings of more than two dollars a mile. The time tables now in force show 256 fewer trains on week days, and 83 fewer on Sundays, than the tables in effect a year ago. These figures represent unprofitable trains taken off. The total reduction, in train miles, is 5,817 on week days and 1,478 on Sundays.

F. R. Stevens, agriculturist of the Lehigh Valley, has issued warnings to farmers regarding the outbreak of foot-and-mouth disease among cattle in the west. The symptoms are mainly inflammation about the hoofs and in the tissues of the mouth,

on the ground that he allowed the late Edward Morris, the meat packer, and members of his family, to ride in a private car as his guests on a trip to Hot Springs in January, 1912, while Mr. Ross was vice-president of the Alton. The railroad also was indicted. It is charged that the Chicago & Alton and Mr. Ross violated the law by permitting Mr. Morris and family to travel without purchasing the full number of fares (18) required by tariff for the use of a car. The Alton officers explained that Mr. Morris had bought tickets for his family and as Mr. Ross' car was attached to the train Mr. Ross invited Mr. Morris and his family to ride in his car as his guests.

New tariffs which have been filed by the Trunk Lines reduce from ten days to five days the length of time which flour will be stored without charge at New York City terminals. The flour dealers say that, because of the irregularity in the arrival of shipments, it will be impossible for them to do business under the new arrangement. Flour is sold on such a small margin of profit that the seller "cannot afford to take any risk of having his profits eaten up by storage charges." Moreover, the amount to be charged after the expiration of the free time is increased from one cent a barrel to 1 cent per 100 lb. A new baggage tariff which has been issued by the Pennsylvania Railroad, prescribing the usual charge for storage of baggage at passenger stations after 24 hours, makes this rule universal, with no exceptions for Sundays or holidays.

Car Location

The accompanying table, which was taken from bulletin No. 23 of the American Railway Association, gives a summary of freight car location by groups on October 1, 1914.

CAR LOCATION ON OCTOBER 1, 1914														
New England.	Pa.	N.Y., N.J., Ohio, Ind., Va., Ky., Tenn., Miss., Ala., Ga., Fla.	Del., Md., Mich., W. Va., No. & So. Carolina.	Iowa, Ill., Wis., Minn.	Mont., Wyo., Neb., Okla., Dakotas.	Kans., Colo., Mo., Ark.	Texas, La., New Mexico.	Oregon, Idaho, Nev., Cal., Ariz.	Canadian Lines.	Grand Total.				
Total Cars Owned.....	87,589	687,750	282,620	216,272	181,519	503,728	25,286	123,705	22,354	137,574	140,562	2,408,959		
Home Cars on Home Roads.....	50,578	442,382	120,110	139,797	112,990	360,125	12,728	80,002	13,556	85,031	93,103	1,510,402		
Home Cars on Foreign Roads.....	37,011	245,368	162,510	76,475	68,529	143,603	12,558	43,703	8,798	52,543	47,459	898,557		
Foreign Cars on Home Roads.....	41,257	248,916	191,445	58,393	50,777	172,017	11,952	39,194	17,693	56,201	21,649	909,494		
Total Cars on Line.....	91,835	691,298	311,555	198,190	163,767	532,142	24,680	119,196	31,249	141,232	114,752	2,419,896		
Excess or Deficiency.....	4,246	3,548	28,935	*18,082	*17,752	28,414	*606	*4,509	8,895	3,658	*25,810	10,937		
Surplus.....	2,299	8,557	26,453	11,993	8,527	22,888	2,771	8,394	2,465	19,326	19,709	133,382		
Shortage.....	869	84	428	215	75	30	0	469	44	135	6	2,355		
Shop Cars—														
Home Cars in Home Shops.....	8,067	59,081	26,045	19,904	16,103	32,242	739	11,198	2,635	6,426	5,740	188,180		
Foreign Cars in Home Shops.....	700	5,621	6,372	903	1,168	4,495	556	1,082	594	3,127	132	24,750		
Total Cars in Shop.....	8,767	64,702	32,417	20,807	17,271	36,737	1,295	12,280	3,229	9,553	5,872	212,930		
Per Cent to Total Cars Owned—														
Home Cars on Home Roads.....	57.74	64.32	42.50	64.64	62.25	71.49	50.34	64.67	60.64	61.81	66.24	62.70		
Total Cars on Line.....	104.85	100.52	110.12	91.64	90.22	105.64	97.60	94.87	139.79	102.66	81.64	100.45		
Home Cars in Home Shops.....	9.21	8.59	9.22	9.20	8.87	6.40	2.92	9.05	11.79	4.67	4.08	.781		
Foreign Cars in Home Shops.....	.80	.82	2.25	.42	.64	.89	2.20	.78	2.65	2.27	.10	1.03		
Total Cars in Shops.....	10.01	9.41	11.47	9.62	9.51	7.29	5.12	9.83	14.44	6.94	4.18	8.84		

*Denotes deficiency.

causing a froth to appear in the mouth. These symptoms may come from other causes, but any suspicious case should be reported immediately to the nearest veterinarian. Stock owners in sections without a veterinary close at hand are told that if they have the slightest doubt as to the presence of the disease to notify the nearest station agent of the Lehigh Valley, and he will get word to its agriculturist at once.

The steamship Pleiades, of the Luckenbach line, arrived at Galveston November 5 from San Francisco by way of the Panama Canal, with a cargo of 66,000 cases of fruit and wine. The Oregonian arrived recently at Poughkeepsie, N. Y., 75 miles above New York City, on the Hudson river, direct from South Bend, Wash., through the Panama Canal, with a cargo of 4,500,000 ft. of lumber. Shipments of grain from the Pacific coast, formerly carried around Cape Horn, are now moving freely through the Panama Canal. The value of shipments from San Francisco by way of the canal in the month of August was \$1,376,000, and in September, \$4,248,000. In October the total was about 25 per cent higher than September. The freight going to New York embraced not only wheat, but also barley, onions and prunes.

W. L. Ross, president of the Toledo, St. Louis & Western, and formerly vice-president of the Chicago & Alton, was indicted by a grand jury at Chicago on November 6, on a charge of violating the interstate commerce law relating to passenger rates,

How to Get Freight

On the St. Louis & San Francisco the plan of making each local freight agent responsible for securing traffic within his territory has now been in operation about 18 months, and the officers of the road are agreed that it is a decided success. With a view to making still further progress toward the high standard which has been set, Chief Traffic Officer W. B. Biddle has issued a circular, the gist of which is as follows:

"Every agent should know every shipper or receiver of freight in his community.

"He should get his full share of the business of each and every one or know the reason for his failure.

"He should know what business is not controlled by his people and advise the proper representative.

"Time is the essence of success and advance information will often get the business.

"His slogan should be—*routing on the order for the goods*. Other forms of advices are important when this cannot be obtained, but at best they are supplementary. The *routing on the order* will usually bring home the bacon."

"Cultivate the traveling salesman. He is an important factor and can frequently give valuable information; and if he is a friend of the road, will go out of his way to help, so long as it does not conflict with his duty to his house or his customer. Where a purchaser does not express preference the traveling salesman frequently inserts the name of the road."

Commission and Court News

INTERSTATE COMMERCE COMMISSION

The Kansas Public Utilities Commission has filed a complaint with the Interstate Commerce Commission against new tariffs filed by the western railways, eliminating the storage privileges on poultry, butter and eggs.

Reconsignment Privileges on Less-Than-Carload Freight

Opinion by Commissioner McChord:

The commission finds that the Atchison, Topeka & Santa Fe and other respondent carriers have justified a proposed withdrawal of the privilege of reconsignment of less than carload freight west of Albuquerque and Belen, N. Mex. (32 I. C. C., 85.)

Westbound Lake-and-Rail Knit Goods Commodity Rates

Opinion by Commissioner Meyer:

The commission finds that the carriers have justified a proposed restoration to the class rate basis of the present commodity rail-and-lake rates on knit goods from Albany, N. Y., and Albany rate points to Chicago, Ill., St. Louis, Minneapolis and other points, the change being intended to eliminate a departure from the general rate structure. (32 I. C. C., 54.)

Reparation Awarded

Schrager Coal Company v. Delaware, Lackawanna & Western, et al. Opinion by Commissioner McChord:

The commission finds that the rates on anthracite coal from complainant's washery on the tracks of the Delaware, Lackawanna & Western to tidewater points on the Central of New Jersey are unreasonable to the extent that they exceed the joint rates to the same destinations from Taylor, Pa.

Rates on Produce from Pittsburgh

Cranford & Bunce et al. v. Pittsburgh, Cincinnati, Chicago & St. Louis et al. Opinion by Commissioner Clark:

The commission finds that the carriers have justified a proposed cancellation of commodity rates and a resulting restoration of class rates on general produce from Pittsburgh to points within about 150 miles east of that city. A similar change in the rates to points west and north of Pittsburgh was made some time ago and approved in *Koehler Produce Company v. Pennsylvania Railroad* (27 I. C. C., 635), decided June 9, 1913. (32 I. C. C., 12.)

Rates on Granite from Points in Vermont to Nebraska

Nebraska State Railway Commission v. Central Vermont et al. Opinion by Commissioner Meyer:

The commission finds that the carriers have not justified the present differences in classification and the considerable difference in rates applicable respectively to dressed and polished granite used for building purposes and granite used for monumental purposes shipped from points in Vermont to points in Nebraska. It is therefore held that the carriers should establish on the monumental granite a classification rating and a rate not in excess of those applicable to dressed and polished granite. (32 I. C. C., 41.)

Charge for Cleaning Cars Made Necessary by Government Quarantine

New Orleans Live Stock Exchange, Limited et al. v. Louisville & Nashville et al. Opinion by Commissioner Clark:

The commission finds a charge of \$2.50 per car for cleaning and disinfecting cars imposed by carriers upon the owners of cattle moved in such cars from territory quarantined because of cattle tick to New Orleans, La., is not unreasonable in itself or discriminatory to New Orleans as compared with points at which no charge is made for a like service required by the

same regulations. The commission states: "The carrier's tariff rates are presumed to provide reasonable charges for the service ordinarily or normally required and performed. If the shipper or receiver demands an additional service, the carrier has a right to assess a reasonable charge therefor. If, because of the nature or condition of the shipper's freight, the federal government or the state finds it necessary or appropriate to require extra precautions in connection with such shipments, which precautions impose upon the carrier an additional service, it is entitled to a reasonable compensation for that extra service." (31 I. C. C., 609.)

Rates on Knitting-Factory Products to Texarkana, Tex.

Opinion by Commissioner Meyer:

The commission finds that the carriers are not justified in canceling certain commodity rates on knitting-factory products from points in North Carolina to Texarkana, Ark., and nearby points, thereby leaving in effect much higher class or commodity rates. The decision in the case of *Texarkana Freight Bureau v. St. Louis, Iron Mountain & Southern*. (28 I. C. C., 569) makes necessary further revision of these rates to Texarkana. The commission, therefore, does not make an order that the present rates be maintained for the future. (31 I. C. C., 669.)

Transit Privileges on Lumber a North Carolina Points

National Casket Company et al. v. Southern Railway. Opinion by Commissioner Clark:

This case relates primarily to the transit privileges on lumber at Asheville and other points in western North Carolina applying on traffic originating in that territory on the Southern Railway west of Asheville from which lumber shipped to the east may be given transit privileges at the points involved herein and all territory on the Southern east of Nashville, Tenn., from which lumber may be drawn to the points in question, there given transit privileges and reshipped west, or to the north of the Ohio river. These privileges with respect to destination are limited to traffic to Ohio and Mississippi river crossings, for beyond; to Virginia cities, for beyond; and to the south Atlantic ports. The commission finds that the present charge of two cents per 100 lb. is neither unreasonable nor discriminatory, it being held that the decisions in the *Spiegler & Company* cases (19 I. C. C., 523; 25 I. C. C., 71) and *Bristol Door & Lumber Co. v. Norfolk & Western* (25 I. C. C., 87) in which a charge in excess of 1.5 cents for similar privileges at Bristol, Johnson City and Newport, Tenn., was held unreasonable, do not mitigate the controlling effects of the evidence in this case.

In like manner the commission finds defendant's rules and regulations governing the transit arrangements not restrictive or burdensome. The commission upholds the regulations of the carrier which do not permit substitution of one kind of lumber for another, except in certain cases. It is also held, however, that certain unreasonable practices in connection with the transit privileges are to be corrected. (31 I. C. C., 678.)

Rates on Wheat from Montana

Board of Railroad Commissioners of the state of Montana v. Butte, Anaconda & Pacific et al. Opinion by Commissioner Daniels:

The commission finds that the rates on grain, especially wheat, and flaxseed from stations in Montana to St. Paul and Minneapolis, Minn., and other eastern primary markets, and also to Seattle and Tacoma, Wash., and Portland, Ore., are not unreasonable. In the case nearly all the railroads in Montana except the Oregon Short Line are made defendants, and it is argued mainly that, although Montana is fast becoming one of the leading wheat producing states, it is unable to realize the full advantages of that fact, because of the high freight rates to the wheat consuming centers. In its decision the commission observes that the price of wheat in Montana is now lower than it has been for a number of years, and states that the reasonableness or unreasonableness of freight rates can not be gauged solely by the ability or inability of shippers under depressed prices to market their products at the existing rates with a reasonable margin of profit.

With reference to a statement that the Chicago, Milwaukee & St. Paul, which is a comparatively new carrier in this territory,

should have established lower rates than those of the older and less direct lines, it is noted that the present ton-mile rate via the St. Paul is not unreasonable and that the line operates in a region comparatively undeveloped.

The commission also holds that the rate on flaxseed, two cents higher than on wheat, is not unreasonable, and that there is justification for differences in rates on the two commodities. The commission also states:

"It was strongly urged by the complainant that a public interest was involved in this case. It was averred that the extension of the Montana wheat-growing area and the increased immigration and settlement thereof would both be promoted by the establishment of rates that would afford the grower a chance of reasonable profit. It was also forcibly urged that the growing necessity of raising breadstuffs for the supply of our own people instead of importing them from abroad warranted this reduction in the national interest. However this may be, it is clearly a question of national policy and one which this commission can hardly consider in gaging the single question of the reasonableness and the justice of existing railroad rates." (31 I. C. C., 641.)

The Manufacturers Railway Case

Manufacturers Railway et al. v. St. Louis, Iron Mountain & Southern, et al. Opinion by Commissioner Clements:

The complainant railway, operating 2 miles of main line and 23 miles of branches and sidings in St. Louis connects the Anheuser-Busch Brewing Association, owned by the same interests, with the trunk line carriers and also serves other industries and shippers. The original report in this case (21 I. C. C., 304), later modified in a supplemental report (28 I. C. C., 93), held that trunk line carriers did not discriminate against the complainant in withdrawing allowances, averaging \$4.50 per car, to the Manufacturers Railway, while continuing to absorb charges, averaging \$3 per car, made by the Terminal Railroad Association of St. Louis, owned by the carriers themselves. It was held that the allowances made to the complainant were voluntary charges and could not be considered as divisions of joint rates. It was further held, however, that the carriers might voluntarily participate in joint rates, provided that in the final division of the through charge received from the shipper they did not pay to the complainant for its service more than was reasonable and did not thereby in the amount of the excess indirectly refund to the brewing association a part of the through transportation charges paid to them by the brewing company. The allowances of \$4.50 per car were found excessive. In the supplemental report in addition it was stated that the reasonable division to the complainant out of any joint rate which might be established should not exceed \$2 a car. Upon further consideration it is now held that the division should not exceed \$2.50 a car.

The present case was brought up partly because it was alleged that the former decision was not in strict accord with the Supreme Court's findings in the Manufacturers Railway case. The commission, however, does not agree with that contention.

In the supplemental report it was stated that an order would be entered on October 1, 1913, if the findings had not been complied with by that date. This has since been extended. An order will now be entered requiring the establishment of maximum joint rates to and from points on the complainant railway which shall not be more than \$2.50 in excess of the trunk lines' rates to and from St. Louis. If the carriers are unable to agree on divisions the commission may be called upon to decide in the matter; it is its present opinion that the proper division would be \$2.50 per car. The commission also reserves the right if necessary to institute an inquiry upon its own motion under those provisions of the act which forbid the giving or receiving of rebates or undue concessions directly or indirectly by any device whatsoever, having in mind particularly in connection therewith the fact of the common ownership of railway and brewery association stock. "There must, in any view taken of this case, be some point at which the fact of this common ownership of stock becomes importantly significant; and immediately beyond the limit of reasonableness in allowances, divisions, or concessions of any kind whatsoever granted by the trunk lines to the complainant railway, comes, in the commission's view, that point. If this be not so, then gross discriminations must thrive, notwithstanding the inhibitions of the act against undue preferences

and discriminations." The report also states: "We are confident in the belief that we have decided the issues raised by it in accordance with both the letter and the spirit of the law. If our conclusions are not sound, we desire that the courts settle definitely the question of what the proper interpretation of the law applicable in this and similar cases is. Cases of this nature involving payments by trunk lines to short terminal lines of railroad which were once only appurtenances to private industrial plants served by them have been the causes of much investigation by and concern to us in our efforts to effectively administer the law under which we act, and the sooner any doubtful constructions of that law with respect to such matters are clearly settled by judicial decisions the better."

Commissioner Harlan in a dissenting opinion states that he is unable to see wherein the complainant railway should receive different treatment from other industrial railways. "Notwithstanding our ruling in the cases last cited that the movement of traffic between a plant and the plant interchange tracks in such cases is a shipper's service and not a carrier's service, a principle that seems, when applied to like conditions, to have been accepted as sound with practical unanimity by railroads, industries, and the courts, the commission here permits the trunk lines out of their rates to pay the shipper for performing an entirely similar service."

He also says: "It is certain that the great privileges enjoyed by large shippers in the form here recognized as proper by the majority will not be tolerated by the general shipping public, which must bear the burden, when they are more fully understood; and the present law, which in my judgment is entirely adequate to enable us to cope with the evil, must either be more strongly construed in the public interest or must promptly be amended by the Congress."

STATE COMMISSIONS

By an order of the Railroad Commissioners of North Dakota rates for excess baggage carried on the railroads of that state have been reduced about one-third; and, according to a St. Paul paper, wholesale merchants of that city expect by this reduction to save \$30,000 a year on the expense bills of their traveling salesmen in North Dakota.

The Public Service Commission of Massachusetts has authorized the establishment of a six-cent fare unit throughout the Middlesex & Boston Street Railway system. In a long opinion the board emphasizes the right of capital to earn a living income; urges investment value as the proper basis of rates rather than the cost of reproduction; affirms the broad powers of the commission with respect to rate making, irrespective of previous franchise agreements between constituent companies and municipalities; condemns the holding company plan; contends that money prudently invested and lost in the earlier stages of a public utility's life should not be irretrievably lost to the stockholder, and sets forth the importance of adequate depreciation allowances. The commission says that the policy of the state is to afford a fair return to capital by the imposition of rates for transportation capable of providing first-class service and a margin of profit sufficient to attract investors into the field. Without such a return, says the opinion, the whole experiment of private ownership and public regulation will fail.

COURT NEWS

The Court of Appeals of Kentucky has declared unconstitutional the law of that state passed by the legislature at its last session limiting passenger fares throughout the state to the basis of 2½ cents a mile. The statute has no enacting clause.

Judge Davis of the Circuit Court at Marshall, Mo., has issued a decision sustaining the demurrer filed by the Chicago & Alton against a suit filed by the attorney-general of Missouri to recover \$2,000,000 in overcharge claims, covering the time when the state freight and passenger rates were in litigation. Of nine demurrers filed in different counties by the different railroad companies against similar suits filed by the attorney general, this is the first that has been sustained. The railroads contended that the suits should have been brought in the federal court.

Railway Officers

Executive, Financial, Legal and Accounting

The office of F. E. Connors, assistant to vice-president of the Atchison, Topeka & Santa Fe, has been removed from Topeka, Kan., to Chicago, Ill.

A. W. Lefever, general manager of the Midland Valley at Muskogee, Okla., has been appointed vice-president and general manager, with headquarters at Muskogee.

C. G. Austin, general attorney of the Chicago & Western Indiana Railroad and the Belt Railway of Chicago, has been appointed general solicitor, with headquarters at Chicago.

Operating

W. L. Schneider has been appointed inspector of transportation of the Delaware & Hudson, with office at Albany, N. Y.

W. E. Cline has been appointed chief train despatcher of the Canadian Pacific, with headquarters at Edmonton, Alta., succeeding C. W. Fisher, transferred.

Walter T. Spencer, trainmaster of the New York, New Haven & Hartford at Providence, R. I., has been appointed superintendent of the Old Colony division, with headquarters at Taunton, Mass., succeeding H. C. Oviatt, promoted.

A. N. Stroud, examiner of rules for trainmen, enginemen and yardmen, on the Oregon Short Line at Pocatello, Idaho, has been appointed trainmaster of the Utah district of the Utah-Montana division, with headquarters at Salt Lake City, Utah, succeeding M. A. Pond, assigned to other duties.

C. A. Grimsley, acting superintendent of the Florida East Coast at Miami, Fla., has been appointed superintendent of the Northern division, with headquarters at New Smyrna, succeeding C. G. Wakeley, who has been appointed a special agent, with headquarters at St. Augustine, and E. L. Cline has been appointed acting superintendent of the Southern division, with headquarters at Miami, succeeding Mr. Grimsley.

Traffic

C. B. Michelson, immigration agent of the St. Louis & San Francisco, has been appointed marketing agent, with office at St. Louis, Mo.

L. R. Everett has been appointed general agent of the Atchison, Topeka & Santa Fe at Santa Barbara, Cal., succeeding W. B. Frisbie, transferred.

S. A. Story, who has been appointed assistant general freight agent of the Lehigh Valley, with headquarters at Buffalo, N. Y., as has already been announced in these columns, began railway work as a clerk in the general freight office of the Pennsylvania Railroad at Philadelphia, Pa., later becoming stenographer to the freight traffic manager. He was then successively chief clerk to the president of the Central New England; New England agent of the Poughkeepsie Bridge Route; eastbound freight agent of the Lehigh Valley at Boston, Mass., and New England freight agent of the Lehigh Valley. He subsequently served as manager of the Lake Shore-Lehigh Valley Fast Freight Line, and the Michigan Central-Lehigh Valley Fast Freight Line, later becoming through freight agent of the Lehigh Valley at Buffalo, N. Y., which position he held at the time of his recent appointment as assistant general freight agent of the same road as above noted.

Engineering and Rolling Stock

J. J. Sullivan has been appointed superintendent of machinery of the Nashville, Chattanooga & St. Louis, with headquarters at Nashville, Tenn., to succeed A. G. Kantman, who recently resigned to devote his time to private affairs.

Purchasing

A. E. Yuill has been appointed tie and timber agent of the Canadian Northern, with jurisdiction over eastern lines, with headquarters at Toronto, Ont.

OBITUARY

Charles L. Atterbury, formerly assistant and attorney to the president of the New York, Lake Erie & Western, now the Erie, died on November 10, at his home in New York. He was born on December 3, 1842, at Detroit, Mich. After graduating from Yale in 1864, he studied law in Detroit. He was in the legal department of the Erie for many years down to about 1885.

Thomas Eedson, formerly auditor of freight accounts and freight claim agent of the Michigan Central, died at his home in Detroit, Mich., on November 1. Mr. Eedson was born January 4, 1842, at Niagara, Ont., and began railway work in 1872 in the treasurer's office of the Canada Southern, then under construction. He continued with that company as cashier from the commencement of its operation up to the time of its operating agreement with the Michigan Central on January 1, 1883, when he became a clerk at St. Thomas, Ont. In September of that year he was transferred to Detroit, Mich., as clerk in the auditor's office, and subsequently was chief traveling auditor, freight accountant and freight claim agent, until July, 1905, when he was appointed auditor of freight accounts and freight claim agent. He held the latter positions until February, 1912, when he was retired under the pension rules of the company.

Will George Van Vleck, vice-president and general manager of the Sunset-Central lines in Texas and Louisiana, with office at Houston, Tex., died on November 10, at his home in Houston.

He was born on March 5, 1857, at Elbridge, Onondaga county, N. Y. He received a common school education, and began railway work in August, 1873, as a telegraph operator with the Grand Rapids & Indiana, remaining with that company for two years. He went with the Galveston, Harrisburg & San Antonio in October, 1875, where he until 1885 was consecutively, for one year telegraph operator, four years despatcher, one year chief despatcher, one year trainmaster of the Mexican & Pacific extension, and two years division superintendent. For over two years from March, 1885,

he was superintendent of the San Antonio division; he was then transferred to the Louisiana division of the Southern Pacific Company, and six months later was made general superintendent of the lines in Texas. From October, 1895, he was manager of the Galveston, Harrisburg & San Antonio, and the Texas & New Orleans, and for a number of years was also second vice-president of those lines, until his election in December, 1911, as vice-president and general manager of the Sunset Central lines.

INDIAN RAILWAY ACCIDENT.—Press despatches report that on October 15 eight persons were killed and eight injured as the result of a collision between two freight trains on the Ghats Mountains, 70 miles from Bombay.

WIRE ROPEWAY CONSTRUCTION IN INDIA.—It has been proposed to construct a wire ropeway from Rajpore, in the territory below Mussoorie, in the northwest Provinces of India, into that city. Mussoorie is a large hill station to which people of the plains and other hot districts go in the heated term. The railway stops at Dehra, just south of Mussoorie, and merchandise is carried up part of the way in carts and partly by coolies. Under the present system above five hours is required to bring goods from Rajpore to Mussoorie. It is believed that the rates will be about the same by wire ropeway as at present, but the saving in time and proper handling of goods will be great.



W. G. Van Vleck

Equipment and Supplies

LOCOMOTIVE BUILDING

THE MAINE CENTRAL is inquiring for prices on 7 Mikado type locomotives.

THE CENTRAL VERMONT has ordered 3 ten-wheel type locomotives from the American Locomotive Company.

THE CHICAGO, MILWAUKEE & ST. PAUL has ordered one 50-ton electric locomotive from the General Electric Company.

THE RUSSIAN GOVERNMENT RAILWAYS are reported to have ordered 30 locomotives from the Baldwin Locomotive Works

THE A. GUTHRIE CONSTRUCTION COMPANY, St. Paul, is said to be in the market for one or two locomotives. This item has not been confirmed.

CAR BUILDING

THE ILLINOIS SOUTHERN is in the market for 300 freight cars.

THE NORTHERN PACIFIC has ordered 21 sleeping cars from the Pullman Company.

THE UNION PACIFIC is said to be preparing specifications for 2,000 fruit cars. This item has not been confirmed.

IRON AND STEEL

THE PADUCAH & ILLINOIS has ordered one 70-ft. through plate girder span, weighing 103 tons, from the American Bridge Company.

THE ARMORED TRAIN "SIMBA" IN UGANDA.—The armored train "Simba," which forms part of the rolling stock of the Uganda Railway stock in war time, was constructed in the Nairobi locomotive shed within a week, work being carried on night and day. The sides of the cars employed are about 5 ft. high and of one-quarter inch steel. To the outside of these are riveted one-half inch steel plates, which bring the total height of the sides of the wagon up to something over six feet, thus affording ample protection to the 40 men accommodated in each car. The steel plates are further covered with a thickness of wood which is painted a slate color. The engine is armored in the same way as the cars.

THE SARA BRIDGE OVER THE LOWER GANGES.—There is now in process of construction in India a bridge over the lower Ganges which ranks as one of the most costly engineering schemes now in hand in India and the Far East. The bridge is being built at Sara Ghat, about 118 miles northeast of Calcutta. When completed it will carry the main line of the Eastern Bengal State Railway across the river at that point, thereby connecting the broad gage system of that road south of the river with the roads north of it. As part of the scheme, also, a line will be built from Sara to Sirajgunj on the Brahmaputra river. Many of the present lines to the north of the Ganges are now of meter gage. For the present, therefore, traffic through to and from Calcutta will have to be transshipped at Santahar, where large yards will be established for that purpose. In the course of time, however, these meter gage lines may be broadened first from Santahar to Parbatipur and then beyond to Siliguri, the southern terminus of the Darjeeling-Himalaya Railway. The bridge has been under discussion for over 20 years and was sanctioned in 1908, as now being constructed it will have 15 main spans of 345 ft. center to center of bearings on piers spaced 359 ft. apart, and at each end there are three land spans of 75 ft. The total length of the bridge will be about 5,900 ft. from abutment to abutment. The main girders have an over all depth at the center of 52 ft.; the width from center to center will be 32 ft., and the total width of the bridge, including the footway will be 48 ft. 6 in. There will also be extensive training works to confine the river to its proper channels. The estimated cost of the work is about \$15,500,000.

Supply Trade News

The Power Specialty Company, New York, has moved its Chicago office from the Peoples Gas building to the Harris Trust building.

Ralph H. Wilson, southeastern representative of the Walter A. Zelnicker Company, St. Louis, has been appointed advertising manager of that company, and has been succeeded by E. F. Prichard, formerly auditor of the St. Louis Car Company, St. Louis, Mo.

The American Locomotive Company announces that it is not its intention at this time to appoint a successor to H. C. Hequembourg, who has resigned, effective November 15, to become vice-president of the Standard Chemical Company, Pittsburgh, Pa. Until further notice the purchasing and stores department will be under the jurisdiction of Leigh Best, vice-president.

George W. Lyndon, whose election as president of the Association of Manufacturers of Chilled Car Wheels, with headquarters at Chicago, was announced in the *Railway Age Gazette* of last week, was born at Rochester, N. Y., February 16, 1859. Mr. Lyndon attended the Kewanee, Ill., high school, graduating in 1877. He was then a law student with Charles K. Ladd, Kewanee, and Turner A. Gill, Kansas City, Mo., until 1880, when he entered railway service with the Kansas Pacific at Kansas City, Mo.

Shortly thereafter he was transferred to Omaha on account of the consolidation of the Kansas Pacific with the Union Pacific. He remained with the Union Pacific as chief clerk of freight accounts until 1885, then accepted a position as traveling auditor of the Kansas City, Fort Smith & Memphis, with headquarters at Kansas City. In 1887 he was appointed freight auditor, resigning in 1889 to accept a position as freight auditor of the Chicago, Kansas City & St. Paul, now the Chicago Great Western. In 1890 he resigned to take a position as general auditor of the Griffin Wheel Company and Ajax Forge Company. Later he was made manager of the improvement and review departments, which position he held until 1907. In 1908 he was made western secretary of the Railway Business Association, and in the same year he accepted a position as secretary and treasurer of the Association of Manufacturers of Chilled Car Wheels, which position he held until his election as president on October 27.

Dr. J. A. L. Waddell and John Lyle Harrington announce the dissolution of the firm of Waddell & Harrington, consulting engineers, Kansas City, Mo. The firm's business will be conducted as usual till the conclusion of its affairs in July, 1915, except that it is accepting no new commissions. Dr. Waddell will give his attention to special engineering and financial matters, and to important advisory work. Mr. Harrington will become a member of the new firm of Harrington, Howard and Ash, as noted elsewhere.

Charles Dyer, vice-president of the National Dump Car Company, died November 8, 1914, at his home in Denver, Colo. Mr. Dyer was born April 30, 1845, at Springfield, Vt. He entered railway service in 1863 with the Rutland & Bennington. From 1868 to 1870, he was with the Boston & Albany, and from November 1, 1870, to February 1, 1900, with the Atchison,



George W. Lyndon

Topeka & Santa Fe, successively as clerk and operator, agent, chief despatcher, trainmaster and division superintendent; from February 1, 1900, to January 30, 1903, he was general superintendent of the Colorado & Southern, and in May, 1903, he accepted the position of second vice-president of the National Dump Car Company, Chicago.

Colonel H. G. Prout has been elected president of the Hall Switch & Signal Company, and William P. Hall is now vice-president and chairman of the executive committee. W. J. Gillingham, hitherto western representative of the company, with office at Chicago, has been appointed general sales manager, with headquarters at the main office in New York City. W. A. Peddle has been appointed acting chief engineer, in charge of engineering and production, and W. H. Lane, chief engineer, has been granted leave of absence until January 1, on account of ill health. Colonel Prout in July last resigned as president of the Union Switch & Signal Company. A sketch of his life was published in the *Railway Age Gazette*, March 27, 1914.

John Lyle Harrington, E. E. Howard and Louis R. Ash have established the firm of Harrington, Howard & Ash, with office in the Orear-Leslie building, Kansas City, Mo., and will conduct a general consulting practice relating to hydro-electric developments, advisory municipal engineering appraisals, examinations, and reports upon engineering projects, giving special attention to foundations, bridges—particularly movable spans—and other structures in steel and reinforced concrete. Mr. Harrington spent many years in bridge and structural shops, two of which he designed and operated, in the service of railroad companies, and in mechanical and electrical work. For three years he was the executive engineer of the C. W. Hunt Co., New York, and for two years chief engineer and manager of the Locomotive & Machine Company of Montreal. For the past eight years he has been a member of the recently dissolved firm of Waddell & Harrington, consulting engineers, Kansas City, and has directed the design and construction of many bridges. Mr. Howard has been associated with Dr. J. A. L. Waddell for fourteen years, for many years as principal assistant engineer, and later as associate engineer of Waddell & Harrington. His experience covers every phase of the firm's work. Mr. Ash has had many years' experience in engineering work, and from July, 1910, to April, 1913, was city engineer of Kansas City, in which capacity he was responsible for the design and construction of sewers, paving, grading, flood protection work, etc. He also made an appraisal of the property of the Metropolitan Street Railway Company, and was engineering adviser for the city in the street railway franchise negotiations. Mr. Ash resigned from the position of city engineer to become associate engineer and office manager of Waddell & Harrington.

TRADE PUBLICATIONS

LIGHT AND VENTILATION.—The David Lupton's Sons Company, Philadelphia, Pa., has just issued specialty catalog No. 8. This book contains 84 pages and gives in considerable detail the design of the various types of steel sash, steel partitions, steel tube doors and jambs, Pond and sawtooth trusses and various kinds of operating devices manufactured by this company. It also contains a description of rolled steel skylights, sheet metal fire-proof windows and Waldmire louvers. Numerous illustrations clearly show the details of construction and the method of installation of these products. Many prominent structures equipped with Lupton products are also shown, together with a list of recent installations.

GAS-ELECTRIC MOTOR CARS AND LOCOMOTIVES.—The General Electric Company recently issued bulletin No. 44,300, which illustrates and describes some gas-electric motor cars and locomotives adapted to branch line service on steam roads and also for interurban service. The power equipment is described in considerable detail, and the average cost of operation of the standard car is given, in addition to other data relative to weights, dimensions, etc. It has also issued bulletins Nos. 44,403 and 44,405, describing its ventilated commutating-pole railway motors for 600 and 600/1,200 volt service. Bulletin 44,403 is devoted to the GE-222-G railway motor, which has a rated output of 140 h. p. at 600 volts, and, having modified windings, can be supplied for operation with two in series on 1,200 volts, at which voltage the rating is 150 h. p. Bulletin 44,405 describes the GE-233-A motor for operating two in series on 1,200 volts.

Railway Construction

CENTRAL CANADA.—This company, which filed route maps with the Alberta Government early this year for a line to be built from a point on the Edmonton, Dunvegan & British Columbia, at or near Round lake, Alta., through the North Hart river valley to Peace River Crossing, is asking permission to build a line also from Sucker creek, on the E. D. & B. C., to Grouard, Alta. J. D. McArthur, Winnipeg, Man., is interested, and Short, Woods, Biggar & Collison, Edmonton, Alta., are solicitors for applicants. (May 1, page 1,011.)

CHICAGO, BURLINGTON & QUINCY.—The report of this company for the year ended June 30, 1914, shows that during the year the line extending southerly from Laurel, Mont., was almost completed to Orin Junction, Wyo., at which place, since the close of the year, it has been connected with the Colorado & Southern. Construction has been carried on for a connection of the Northport-Guernsey line with the Colorado & Southern at Wendover, Wyo., and work was started on the construction of the Chalco-Yutan line, which is to be a cut-off connecting the Omaha line with the line to Sioux City. There was placed in operation during the year 135.15 miles of new road, 73.81 miles of second track and 87.69 miles of other tracks. Additional land for needed facilities has been bought at Chicago, at Aurora, Ill., and at other points, and a number of freight houses and passenger stations were built.

FLORIDA ROADS.—According to press reports plans are being made to build a municipal railway in Jacksonville. The proposed belt line is to connect the municipal docks with the railroads entering the city.

GADSDEN, BELLEVUE & LOOKOUT MOUNTAIN (Electric).—An officer of this company, which operates an electric line connecting Gadsden, Ala., with Noccalula Falls, 3.1 miles, writes regarding a report that an extension is to be built between Gadsden and Center, that the company expects to start surveys for the extension in about 60 days.

GLENN ROSE & WALNUT SPRINGS.—According to press reports grading work has been finished on two miles and track laying will be started soon on the line building from Glenn Rose, Tex., south to Walnut Springs, 14 miles. S. Lewis, secretary, Waco; F. B. King, general manager, Glenn Rose, and L. J. Wright, construction foreman. (See Texas Roads, September 4, p. 452.)

KENTUCKY SOUTHWESTERN ELECTRIC RAILWAY, LIGHT & POWER COMPANY.—An officer of this company, which was incorporated in 1911, writes that contracts will be let and construction work started soon, on the line projected from Paducah, Ky., south through Lone Oak, Melber and Fancy Farm to Mayfield, thence east via Sedalia and Lynn Grove to Murray, 57.75 miles. The work will be easy and calls for cuts and fills involving the handling of about 1,000,000 cu. yd. The maximum grade will be 2 per cent, and the maximum curvature 8 deg. There will be one 1,800-ft. trestle and a number of smaller ones. The plans include: a power house, three sub-stations, stations, car barns and repair shop. H. C. Rhodes, president; Paducah.

LULA-HOMER.—Application has been made in Georgia for a charter by this company, with a capital of \$200,000, to build a line from Lula, Ga., on the Southern Railway southeast to Homer, 14 miles. S. S. Carter, E. Chapman and J. Coffee, Lula, are interested. (See Georgia Roads, October 2, p. 624.)

MERCER ELECTRIC.—Plans are being made, it is said, to build an electric line from Athens, W. Va., southwest to Princeton, about seven miles. R. G. Meador, president, Athens.

MONONGAHELA RAILROAD.—The River division has been extended from Martin, Pa., south to Vanzandt, 9.1 miles.

NIAGARA RIVER & EASTERN.—An officer writes that the plans call for building from Lockport, N. Y., west to the Niagara river. At Lockport connections will be made with the Buffalo, Lockport & Rochester and the International Railway. The company plans to carry out the work with its own forces and to use both steam and electricity as the motive power. Charles Hickey, president, Lockport, N. Y. (October 30, p. 818.)

ONTARIO MUNICIPAL ELECTRIC.—We are told that contracts will probably be let next summer to build from Toronto, Ont., northeast to Port Perry; also from St. Catharines northwest through Hamilton and Guelph to Owen Sound. The grading work will involve handling an average of 15,000 cu. yd. to the mile. The maximum grades will be 2.5 per cent, and the maximum curvature 6 deg. The plans also call for building an interurban terminal at Toronto. F. A. Gaby, chief engineer, Continental Life building, Toronto, Ont. (See Canadian Roads, October 30, p. 818.)

ORLEANS-KENNER ELECTRIC.—An officer writes that work is now under way by Johnson & Co., Inc., New Orleans, La., building a line in Louisiana from St. Charles parish line east, to connect Hanson City, Kenner, Harahan, Shrewsbury, West Carrollton, Southport and New Orleans, about 14 miles, and that track laying is about 90 per cent finished. A contract has also been let for building a sub-station. E. A. Stanford, president; H. K. Johnson, chief engineer. New Orleans. (October 23, p. 779.)

RAILWAY STRUCTURES

ALBANY, PA.—The Philadelphia & Reading has given a contract to M. & J. B. McHugh, Philadelphia, Pa., for building a concrete bridge over Maiden creek at a point south of Albany. The bridge will have six spans each about 23 ft. long.

BRIDGE END, ONT.—The Railway Commission of Canada has approved the locations of the Glengarry & Stormont Company's proposed stations and grounds in Glengarry county, Ont., at Bridge End, mileage 5.28, and at Glen Gordon, mileage 12.78. This company is building a line from St. Polycarpe Junction, Que., southwest to Cornwall, Ont., 30 miles.

CHATTANOOGA, TENN.—We are told that construction work is expected to be finished this month on a reinforced concrete viaduct which is being built over the tracks of the Cincinnati, New Orleans & Texas Pacific, and the Western & Atlantic at East End avenue, Chattanooga. The length of the concrete structure between abutments is 371.7 ft. The length of the north approach fill is 160 ft., and the south approach fill is 470 ft. The viaduct is 60 ft. wide.

CITY OF PANAMA.—The Panama Railroad has begun work on a new freight house. The building will be 75 ft. by 600 ft., and one story high, and will replace the old freight house which was recently condemned by the health authorities on account of its lack of protection against an invasion by rats.

EAST ST. LOUIS, ILL.—The Southern Railway will start work at once on new engine terminal facilities at Denverside, near East St. Louis, at a cost of about \$275,000, and is asking for bids for the construction of an 18-stall roundhouse, shops and other buildings. The improvements also include a 90-ft. turntable, modern coal and cinder handling plant, oil house, office building, etc., and the construction of repair yard tracks and other track work. The grading work for the tracks is now under way.

LEXINGTON, KY.—The Louisville & Nashville has given a contract to Rommel Brothers, Louisville, Ky., it is said, for building the roundhouse and repair shops in the yard at Lexington. (October 2, p. 624.)

NORFOLK, VA.—A contract was let recently, it is said, to the Richardson Construction Company, Norfolk, for building a two-story addition to the general office building of the Seaboard Air Line at Norfolk. (August 7, p. 268.)

ST. CATHARINES, ONT.—According to press reports the Grand Trunk is planning to put up a new station at St. Catharines.

ST. PETERSBURG, FLA.—According to press reports the Tampa & Gulf Coast which recently completed an extension to St. Petersburg is making plans to build a passenger station at St. Petersburg. The cost of the improvements will be about \$20,000.

SPARTANBURG, S. C.—Plans have been made, it is said, for the enlargement of the present passenger station at Spartanburg, and when the improvements are completed it will be used jointly by the Southern Railway, the Carolina, Clinchfield & Ohio and the Charleston & Western as a union station.

Railway Financial News

MISSOURI, KANSAS & TEXAS.—The Supreme Court of the United States on November 9 dismissed the suit of the Missouri, Kansas & Texas Railway Company against the United States for \$61,000,000 damages for failure to convey to it alternate sections of land through what was the Indian Territory.

Congress in 1866 offered alternate sections of public land in Indian Territory to the first railroad constructed from the Kansas state line to the Red river in Texas. The predecessor of the Missouri, Kansas & Texas won a construction contest, but the government declined to convey the land on the ground that the land was "Indian land" and not "public land" within the meaning of the act. The Court of Claims decided in favor of the government and the railway appealed to the Supreme Court, which now has affirmed the decision of the lower court.

The railway company brought the suit on the ground that the company as a land grant road was entitled to take alternate sections on each side of its right of way whenever the Indian title became extinct. The issue was whether the Indian title was extinguished when the Indians gave up their tribal relation and took lands in severalty as allottees of the government.

The railroad company contended that when the government divested the Indians of their tribal title the claim of the railway under its grant of alternate sections attached. The Court of Claims took a different view.

ST. LOUIS & SAN FRANCISCO.—Suits to recover \$14,000,000 from directors and former directors of the St. Louis & San Francisco were dismissed in the federal court at St. Louis on November 10. The dismissal of the suit, which was filed by the receivers, is part of the plan of the receivers to disclaim liability of the Frisco on a \$26,000,000 bond issue of the New Orleans, Texas & Mexico. The attorneys for the receivers issued the following statement:

Inasmuch as the dismissal of this action will deprive the defendants of the opportunity to meet the charges of fraud made in the petition, we deem it but just to them to say that we have made an exhaustive examination.

We found that in that so-called Brownsville and Iberia deals for the latter of which settlement has been made, there was, in our opinion, an excessive exercise of authority by the directors, for the results of which, in the case of the Brownsville, the directors probably could be held accountable, and that certain of them also might be held accountable for profits made out of the deal, if the courts should decide that the St. Louis & San Francisco Railroad Company is liable at all on account of the New Orleans, Texas & Mexico division bonds.

We have failed, however, to find, and judging from the information that we have, we do not believe that any of the directors of the St. Louis & San Francisco have been guilty of any actual, wilful or intentional fraud in the administration of the affairs of the company.

On January 22, 1914, the receivers of the Frisco filed suit in the federal court for more than \$14,000,000 against ten men who are directors of the Frisco from December 1, 1909, to June 1, 1910. During that time the Brownsville road was purchased. The ten men sued were B. F. Yoakum, former president of the Frisco board of directors; James Campbell of St. Louis, vice-president of the Frisco and head of the North American Company, which instituted the receivership proceedings, and seven other former directors of the Frisco—W. K. Bixby of St. Louis, A. S. Greig of St. Louis, B. L. Winchell of Chicago, E. V. R. Thayer of Boston, and C. W. Hilliard, Frank Trumbull and Hans Winterfeldt of New York.

SAN ANTONIO, FREDERICKSBURG & NORTHERN RAILWAY.—This property was on October 29 put in the hands of a receiver on application of R. A. Love of Kansas City, Mo., president of the company. The line extends from Fredericksburg southward 24 miles to a connection with the San Antonio & Aransas Pass. It has been in operation only about a year. M. L. Trice was appointed receiver by Judge Maxey in the Federal Court. The road's indebtedness is \$173,000; assets said to be \$500,000.

[ADVERTISEMENT.]

ANNUAL REPORTS

CHICAGO, BURLINGTON & QUINCY RAILROAD COMPANY—SIXTIETH ANNUAL REPORT

To the Stockholders of the Chicago, Burlington & Quincy Railroad Company:
The following is the report of your Board of Directors for the year ended June 30, 1914:

CHICAGO, BURLINGTON & QUINCY RAILROAD COMPANY.

YEARS ENDED JUNE 30,

Per Cent.	1914.	OPERATING REVENUES.	1913.	Per Cent.
67.71	\$62,799,188.01	Freight Revenue	\$64,063,856.49	67.88
23.44	21,743,507.05	Passenger Revenue	21,895,690.73	23.20
2.62	2,428,503.50	Mail Revenue	2,329,351.41	2.47
2.80	2,595,965.75	Express Revenue	2,894,812.78	3.07
2.28	2,116,431.75	Miscellaneous Transportation	2,146,658.47	2.28
1.01	940,917.06	Revenue from Operations other than Transportation	909,376.59	.96
.14	126,421.03	Joint Facilities	134,739.04	.14
100.00	\$92,750,934.15	Total Operating Revenue...	\$94,374,485.51	100.00
 OPERATING EXPENSES.				
12.94	\$12,002,627.57	Maintenance of Way and Structures	\$12,535,862.55	13.28
17.13	15,888,686.45	Maintenance of Equipment	16,133,215.36	17.10
1.76	1,634,672.43	Traffic Expenses	1,586,802.81	1.68
32.59	30,224,523.90	Transportation Expenses	29,997,717.32	31.79
2.59	2,397,887.66	General Expenses	2,589,292.99	2.74
67.01	\$62,148,398.01	Total Operating Expenses...	\$62,842,891.03	66.59
32.99	\$30,602,536.14	Net Operating Revenue....	\$31,531,594.48	33.41
 Net Deficit from Outside Operations				
.....	140,247.90	Operations	127,691.01	.....
.....	\$30,462,288.24	Total Net Revenue	\$31,403,903.47	.....
.....	\$ 4,028,900.48	Taxes Accrued	\$ 3,563,358.62	.....
.....	\$26,433,387.76	Operating Income	\$27,840,544.85	.....
 OTHER INCOME.				
.....	\$ 601,538.27	Rents	\$ 632,910.23	.....
.....	899,538.84	Miscellaneous Interest	1,327,019.67	.....
.....	\$ 1,501,077.11	Total Other Income.....	\$ 1,959,929.90	.....
.....	\$27,934,464.87	Gross Corporate Income....	\$29,800,474.75	.....

DEDUCTIONS FROM GROSS CORPORATE INCOME.

\$ 1,487,921.93	Rents	\$ 1,158,071.87
128,707.50	Miscellaneous Interest	305.52
8,499,051.11	Interest Accrued on Funded Debt	8,546,453.42
659,861.03	Sinking Funds	655,450.28
44,516.16	Discount on Funded Debt...	9,447.77
.....
\$10,820,057.73	Total Deductions	\$10,369,728.86
.....
\$17,114,407.14	Net Corporate Income....	\$19,430,745.89
.....
\$ 8,867,128.00	Dividends	\$ 8,867,128.00
.....	Appropriations for Additions and Betterments	7,647,743.21
.....
\$14,583,003.07	.....	\$16,514,871.21
.....
\$ 2,531,404.07	Surplus for the Year.....	\$ 2,915,874.68

CAPITALIZATION.

CAPITAL STOCK.

Number of Shares. 1,108,391	Total Par Value Authorized and Outstanding. \$110,839,100.00	Dividends Declared During the Year.	
		Rate. 8%	Amount. \$8,867,128.00

FUNDED DEBT.

Description of Bond.	Author- ized.	Out- standing.	Total Par Value		
			In Treasury, in Sinking Funds or Pledged as Collateral.	In Hands of Public.	Interest Accrued During Year.
Mortgage..	\$222,020,000	\$203,849,800	\$23,492,400	\$180,357,400	\$8,059,963.11
Collateral Trust ...	7,968,000	7,310,200	5,660,000	1,650,200	292,408.00
Plain or Debenture..	4,300,000	3,667,000	3,106,000	561,000	146,680.00
Total ...	\$234,288,000	\$214,827,000	\$32,258,400	\$182,568,600	\$8,499,051.11

TRAFFIC AND OPERATING STATISTICS.

ITEM.

	1914.		1913.		Increase or Decrease.	
	Dollars and Whole Numbers.	Cents and Decimals.	Dollars and Whole Numbers.	Cents and Decimals.	Dollars and Whole Numbers.	Cents and Decimals.
 PASSENGER TRAFFIC.						
Number of Passengers Carried Earning Revenue.....	23,445,911	.....	23,100,539	.....	Inc. 345,372	.....
Number of Passengers Carried One Mile.....	1,152,123,930	.....	1,139,958,615	.....	Inc. 12,165,315	.....
Number of Passengers Carried One Mile, per Mile of Road.....	126,058	.....	125,139	.....	Inc. 919	.....
Average Distance Carried, Miles.....	49	14	49	35	Dec. 21	.....
Total Passenger Revenue.....	\$21,743,507	05	\$21,895,690	73	Dec. \$152,183	68
Average Amount Received from each Passenger.....	92739	.....	94784	.....	Dec. 2045	.....
Average Receipts per Passenger per Mile.....	01888	.....	01921	.....	Dec. 00033	.....
Total Passenger Service Train Revenue.....	\$27,443,073	19	\$27,820,639	23	Dec. \$377,566	04
Passenger Service Train Revenue per Mile of Road.....	\$3,002	65	\$3,054	02	Dec. \$51	37
Passenger Service Train Revenue per Train Mile.....	\$1	47134	\$1	52022	Dec. 04888	.....
 FREIGHT TRAFFIC.						
Number of Tons Carried of Freight Earning Revenue.....	32,388,800	.....	33,389,439	.....	Dec. 1,000,639	.....
Number of Tons Carried One Mile.....	8,612,629,607	.....	8,791,435,597	.....	Dec. 178,805,990	.....
Number of Tons Carried One Mile per Mile of Road.....	942,339	.....	965,083	.....	Dec. 22,744	.....
Average Distance Haul of One Ton, Miles.....	265	91	263	30	Inc. 2	61
Total Freight Revenue.....	\$62,799,188	01	\$64,063,856	49	Dec. \$1,264,668	48
Average Amount Received for each Ton of Freight.....	\$1	93892	\$1	91869	Inc. 02023	.....
Average Receipts per Ton per Mile.....	00729	.....	00729	.....	Dec. 00033	.....
Freight Revenue per Mile of Road.....	\$6,871	09	\$7,032	63	Dec. \$161	54
Freight Revenue per Train Mile.....	\$3	48951	\$3	52568	Dec. 03617	.....
 OPERATING.						
Operating Revenues	\$92,750,934	15	\$94,374,485	51	Dec. \$1,623,551	36
Operating Revenues per Mile of Road.....	\$10,148	21	\$10,360	00	Dec. 211	79
Operating Revenues per Train Mile.....	\$2	59540	\$2	64737	Dec. 05197	.....
Operating Expenses	\$62,148,398	01	\$62,842,891	03	Dec. \$694,493	02
Operating Expenses per Mile of Road.....	\$6,799	88	\$6,898	60	Dec. \$98	72
Operating Expenses per Train Mile.....	\$1	73907	\$1	76285	Dec. 02378	.....
Net Operating Revenue.....	\$30,602,536	14	\$31,531,594	48	Dec. \$929,058	34
Net Operating Revenue per Mile of Road.....	\$3,348	33	\$3,461	40	Dec. \$113	07
Net Operating Revenue per Train Mile.....	85633	.....	88452	.....	Dec. 02819	.....
Average Number of Passengers per Car Mile.....	15	.....	16	.....	Dec. 1	.....
Average Number of Passengers per Train Mile.....	62	.....	62	.....	Dec. 04	.....
Average Number of Passenger Cars per Train Mile.....	6	27	6	23	Inc. 02	.....
Average Number of Tons of Freight per Loaded Car Mile.....	19	08	19	10	Dec. 5	26
Average Number of Tons of Freight per Train Mile.....	478	57	483	83	Inc. 88	.....
*Average Number of Freight Cars per Train Mile.....	37	84	36	96	Dec. 25	25
Average Number of Loaded Cars per Train Mile.....	25	09	25	34	Dec. 1	14
Average Number of Empty Cars per Train Mile.....	11	80	10	66	Inc. 30	12
Average Mileage Operated During Year.....	9,139	63	9,109	51	Inc. 0	.....

*Including Cabooses.

MILEAGE STATISTICS.

ITEM.	1914. Miles.	1913. Miles.	Increase or Decrease. Miles.
LOCOMOTIVE MILEAGE—			
Revenue Service.			
Freight Locomotive Miles.....	18,700,800	19,130,297	Dec. 429,497
Passenger Locomotive Miles.....	18,164,766	17,862,403	Inc. 302,363
Mixed Locomotive Miles.....	936,243	844,265	Inc. 91,978
Special Locomotive Miles.....	20,026	17,310	Inc. 2,716
Switching Locomotive Miles.....	9,779,536	9,951,205	Dec. 171,669
Total	47,601,371	47,805,480	Dec. 204,109

Locomotive Mileage—Non-revenue Service	1,826,016	2,260,030	Dec. 434,014
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CAR MILEAGE—Revenue Service.

Freight Car Mileage:			
Loaded	451,470,933	460,405,258	Dec. 8,934,325
Empty	212,332,776	193,706,979	Inc. 18,625,797
Caboose	17,132,686	17,427,153	Dec. 294,467
Total	680,936,395	671,539,390	Inc. 9,397,005
Passenger Car Mileage:			
Passenger	47,548,623	46,273,265	Inc. 1,275,358
Sleeping, Parlor and Observation	27,219,853	26,388,011	Inc. 831,842
Other Passenger Train Cars....	42,270,155	41,336,527	Inc. 933,628
Total	117,038,631	113,997,803	Inc. 3,040,828
Car Mileage in Special Service:			
Freight, Loaded	175,643	207,178	Dec. 31,535
Freight, Empty	5,857	320	Inc. 5,537
Caboose	17,939	16,219	Inc. 1,720
Passenger	58,123	60,598	Dec. 2,475
Sleeping, Parlor and Observation	1,571	86	Inc. 1,485
Total	259,133	284,401	Dec. 25,268
Total Car Mileage—Revenue Service	798,234,159	785,821,594	Inc. 12,412,565

Car Mileage—Non-revenue Service

TRAIN MILEAGE—Revenue Service.	6,637,427	10,136,338	Dec. 3,498,911
Freight Train	17,065,955	17,331,661	Dec. 265,706
Passenger Train	17,721,174	17,461,373	Inc. 259,801
Mixed Train	930,638	838,983	Inc. 91,655
Special Train	18,879	16,378	Inc. 2,501
Total Train Mileage—Revenue Service	35,736,646	35,648,395	Inc. 88,251

Train Mileage—Non-revenue Service

1,043,727	1,331,388	Dec. 287,661
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EQUIPMENT.

ITEMS.	Number on June 30, 1913.	Number Added During Year.	Number Retired During Year.	Number on June 30, 1914.	Average Trac- tive Power All Locomotives and Average Capacity All Freight Cars.
LOCOMOTIVES—Owned.					
Passenger	456	...	12	444	.....
Freight	922	22	25	919	.....
Switching	394	25	9	410	.....
Total Locomotives ...	1,772	47	46	1,773	29,549 lbs.
CARS—Owned.					
Passenger Service:					
First-class Cars	659	..	15	644	.....
Combination Cars	231	27	5	253	.....
Dining Cars	37	5	1	41	.....
Baggage, Express and Postal Cars	267	16	14	269	.....
Parlor Cars	14	...	...	14	.....
Other Cars in Passenger Service	45	...	4	41	.....
Total	1,253	48	39	1,262	.....
Freight Service:					
Box Cars	27,773	5,851	2,666	30,958	.....
Flat Cars	1,603	..	31	1,572	.....
Stock Cars	7,295	400	161	7,534	.....
Coal Cars	16,548	5,500	248	21,800	.....
Tank Cars	113	100	..	213	.....
Refrigerator Cars	2,318	750	71	2,997	.....
Other Cars in Freight Service	85	...	2	83	.....
Total	55,735	12,601	3,179	65,157	40.30 tons.
Company's Service:					
Officers' and Pay Cars..	32	1	1	32	.....
Gravel Cars	975	...	...	975	.....
Derrick Cars	41	..	..	41	.....
Caboose Cars	682	25	21	686	.....
Other Road Cars.....	4,571	154	101	4,624	.....
Total	6,301	180	123	6,358	.....
Total Cars Owned....	63,289	12,829	3,341	72,777	.....

RAILWAY AGE GAZETTE

MILEAGE.

MILEAGE OF ROAD OPERATED.

STATE.	Line Owned.	Operated Under Lease.	Total Line Operated.
Illinois	1,672.38	112.86	1,785.24
Iowa	1,365.12	73.44	1,438.56
Missouri	1,122.31	10.89	1,133.20
Wisconsin	222.49	.53	223.02
Minnesota	23.61	14.84	38.45
Nebraska	2,850.34	22.37	2,872.71
Kansas	259.32	.82	260.14
Colorado	394.36	34.97	429.33
South Dakota	281.48	.....	281.48
Wyoming	617.90	.....	617.90
Montana	134.38	49.45	183.83
Total	8,943.69	320.17	9,263.86

LINE OWNED.

STATE.	Single Track.	Second Track.	Third Track.	Yard Track and Sidings.	Total.
Illinois	1,672.38	359.64	42.40	926.07	3,000.49
Iowa	1,365.12	244.53	.....	336.58	1,946.23
Missouri	1,122.31	107.06	.....	432.16	1,661.53
Wisconsin	222.49	104.46	.....	75.90	402.85
Minnesota	23.61	2.25	.....	30.57	56.43
Nebraska	2,850.34	17.96	.....	679.87	3,548.17
Kansas	259.32	.....	.....	24.17	283.49
Colorado	394.36	.....	.....	154.62	548.98
South Dakota	281.48	.....	.....	62.31	343.79
Wyoming	617.90	.....	.....	165.37	783.27
Montana	134.38	.....	.....	32.75	167.13
Total	8,943.69	835.90	42.40	2,920.37	12,742.36

TAXES.

	1914.	1913.	Increase or Decrease.
Illinois	\$ 924,820.72	\$ 755,691.95	Inc. \$169,128.77
Iowa	512,400.43	442,147.40	Inc. 70,253.03
Missouri	396,164.54	400,659.55	Dec. 4,495.01
Wisconsin	239,746.19	207,261.45	Inc. 32,484.74
Minnesota	34,817.05	26,955.28	Inc. 7,861.77
Nebraska	1,049,459.83	963,763.18	Inc. 85,696.65
Kansas	69,804.97	60,796.95	Inc. 9,008.02
Colorado	207,830.02	176,730.84	Inc. 31,099.18
South Dakota	92,831.92	73,380.10	Inc. 19,451.82
Wyoming	228,122.67	172,675.50	Inc. 55,447.17
Montana	57,858.55	45,311.26	Inc. 12,547.29
Other States	183.82	427.82	Dec. 244.00
Total States	\$3,814,040.71	\$3,325,801.28	Inc. \$488,239.43
United States Government...	214,859.77	237,557.34	Dec. 22,697.57
Grand Total	\$4,028,900.48	\$3,563,358.62	Inc. \$465,541.86

FREIGHT TRAFFIC MOVEMENT—ENTIRE LINE.

COMPANY'S MATERIAL EXCLUDED.

COMMODITIES.	Originating on this Road. Tons.	Received from Con- nections. Tons.	Total Freight Tonnage. Tons. Per Cent.
Products of Agriculture—			
Grain	3,462,377	846,322	4,308,699 13.30
Flour	497,243	140,707	637,950 1.97
Other Mill Products	226,822	52,606	279,428 .86
Hay	325,248	60,033	385,281 1.19
Tobacco	1,715	555	2,270 .01
Cotton	2,335	13,461	15,796 .05
Fruits and Vegetables	397,092	774,643	1,171,735 3.62
Other Products	141,312	77,371	218,683 .68
Total	5,054,144	1,965,698	7,019,842 21.68
Products of Animals—			
Live Stock	1,520,096	199,254	1,719,350 5.31
Dressed Meats	145,408	6,121	151,529 .47
Other Packing House Products	161,894	7,594	169,488 .52
Poultry, Game and Fish	61,790	42,194	103,984 .32
Wool	7,948	6,862	14,810 .05
Hides and Leather	14,937	2,317	17,254 .05
Other Products	59,220	25,969	85,189 .26
Total	1,971,293	290,311	2,261,604 6.98
Products of Mines—			
Anthracite Coal	22,113	126,274	148,387 .46
Bituminous Coal	8,339,328	1,730,163	10,069,491 31.09
Coke	18,373	167,946	186,319 .57
Ores	102,312	382,379	484,691 1.50
Stone, Sand, etc.	1,746,404	282,964	2,029,368 6.26
Other Products	86,753	249,664	336,417 1.04
Total	10,315,283	2,939,390	13,254,673 40.92
Products of Forests—			
Lumber	288,540	1,581,917	1,870,457 5.77

Manufactures—

Petroleum and other Oils.....	137,413	318,989	456,402	1.41
Sugar	122,495	127,120	249,615	.77
Naval Stores	10,324.	2,359	12,683	.04
Iron, Pig and Bloom.....	9,873	117,884	127,757	.39
Iron and Steel Rails.....	28,401	97,731	126,132	.39
Other Castings and Machinery.....	146,403	216,909	363,312	1.12
Bar and Sheet Metal.....	42,629	195,833	238,462	.74
Cement, Brick and Lime.....	1,385,916	434,340	1,820,256	5.62
Agricultural Implements	161,881	74,762	236,643	.73
Wagons, Carriages, Tools, etc.....	35,847	58,268	94,115	.29
Wines, Liquors and Beers.....	146,476	44,763	191,239	.59
Household Goods, etc.....	147,700	75,370	223,070	.69
Other Manufactures	422,372	455,393	877,765	2.71
Total	2,797,730	2,219,721	5,017,451	15.49
Merchandise	1,296,712	566,112	1,862,824	5.75
Miscellaneous	695,232	152,385	847,617	2.62
Total Tonnage	22,547,203	9,841,597	32,388,800	100.00

EXPENDITURES FOR NEW LINES AND EXTENSIONS, FOR EQUIPMENT, AND FOR ADDITIONS AND BETTERMENTS DURING THE YEAR.

ACCOUNT.	Additions and Betterments.			
	New Lines and Extensions.	Charged to Road and Equipment.	Charged to Income.	Total Expenditure.
I.—ROAD.				
Engineering	\$ 51,965.21	\$ 27,505.21	\$ 15,801.50	\$ 95,271.92
Right of Way and Station Grounds	237,502.04	1,755,620.41	.....	1,993,122.45
Real Estate .....	..... Cr.	321.44	Cr.	321.44
Grading	932,211.26	430,035.21	271,304.66	1,633,551.13
Tunnels	157,053.63	.....	28.67	157,082.30
Bridges, Trestles and Culverts..	441,227.46	209,729.83	535,008.93	1,185,966.22
Ties	366,938.12	155,229.75	Cr. 5,411.32	516,756.55
Rails	393,816.64	330,652.26	222,054.47	946,523.37
Frogs, Switches	9,948.24	40,849.97	19,981.40	70,779.61
Track Fastenings and other mat'l	121,172.58	52,343.97	318,334.16	491,850.71
Total .....	.....	.....	.....	.....
				Total \$ 3,563,763.60 \$ 3,718,825.81 \$ 2,366,713.09 \$ 9,649,302.50
II.—EQUIPMENT.				
Steam Locomotives .....	.....	.....	\$ 282,731.81	\$ 333,467.01
Pass. Train Cars.	.....	.....	135,023.28	256,384.05
Frt. Train Cars.	.....	.....	6,931,420.81	2,782,070.09
Work Equipment.	.....	.....	64,440.39	Cr. 13,644.28
Floating Equip't.	.....	.....	.....	29.02
Total .....	.....	.....	\$ 7,413,616.29	\$ 3,358,305.89
				\$ 10,771,922.18

GENERAL BALANCE SHEET.
June 30, 1914.

ASSETS.

Property Investment—Road and Equipment:	
Road	\$ 356,740,929.14
Equipment	76,911,265.96
General Expenditures	174,194.12
Reserve for Accrued Depreciation—Credit.....	26,069,041.05
Total	\$ 407,757,348.17

Securities:

Securities of Proprietary, Affiliated and Controlled Companies, Pledged—Stocks	\$ 19,363,139.38
Securities Issued or Assumed, Pledged—Funded Debt	31,000.00
Securities of Proprietary, Affiliated and Controlled Companies, Unpledged—Stocks	\$ 7,488,521.17
Funded Debt	656,050.00
Total	\$ 27,538,710.55

Other Investments:

Advances to Proprietary, Affiliated and Controlled Companies for Construction, Equipment and Betterments..	\$ 645,786.51
Miscellaneous Investments—Physical Property	\$ 1,447,778.92
Securities Unpledged	1,489,676.89

Total

Working Assets:	
Cash	\$ 6,516,196.57
Securities Issued or Assumed, Held in Treasury—Funded Debt	11,573,100.00
Marketable Securities—Stocks	\$ 763,072.12
Funded Debt	62,500.00
Loans and Bills Receivable	825,572.12
Traffic and Car Service Balances due from other Companies	3,640,712.38
Net Balance Due from Agents and Conductors	651,066.52
Miscellaneous Accounts Receivable	2,395,244.29
Materials and Supplies	3,449,369.68
Other Working Assets	7,648,614.05
Total	\$ 36,797,133.73

Deferred Debit Items:

Advances—Temporary Advances to Proprietary, Affiliated and Controlled Companies..	\$ 81,521.44
Working Funds	163,818.58
Other Advances	3,704,373.79
Insurance Paid in Advance	149,594.72
Cash and Securities in Sinking Funds	20,516,477.89
Securities in Provident Funds	496,538.89
Unextinguished Discount on Funded Debt	2,328,669.40
Other Deferred Debit Items	975,289.68

Total

Grand Total

Ballast	53,404.36	72,583.65	96,460.65	222,448.66
Track Laying and Surfacing	110,625.83	313,283.01	89,564.16	513,473.00
Roadway Tools	355.79	.....	.....	355.79
Fencing R. of W.	15,028.69	12,598.64	.....	27,627.33
Cross'gs and Signs	1,763.22	52,896.99	156,252.17	210,912.38
Interlocking and other Sig. App.	530.34	192,324.27	61,538.24	254,392.85
Tel. and Tel. Lines	8,768.34	Cr. 219.58	17,345.01	25,893.77
Station Buildings and Fixtures	382,363.30	5,430.81	248,771.44	636,565.55
Gen'l Office Bldg. and Fixtures .....	.....	.....	56,442.53	56,442.53
Shops, Eng. Hs. and T'n Tables	28,591.89	Cr. 9,919.81	45,754.48	64,426.56
Shop Machinery and Tools	170.22	1,097.36	16,469.96	17,737.54
Water Stations	82,076.91	Cr. 1,637.99	59,819.86	140,258.78
Fuel Stations	19,094.48	26,994.49	26,047.02	72,135.99
Grain Elevators .....	.....	.....	31,108.42	31,108.42
Storage Wareh's. Dock and Wharf	18.56	27,047.33	.....	27,065.89
Property	5,650.70	.....	.....	5,650.70
Elec. Lgt. Plants	Cr. 3,153.02	.....	.....	3,153.02
Misc. Structures	7,102.79	27,854.49	84,036.68	118,993.96
Transp. of Men and Material	92,159.09	.....	.....	92,159.09
Rent of Equip.	23,960.02	.....	.....	23,960.02
Repairs of Equip.	10,009.62	.....	.....	10,009.62
Earns. and Op'g Exp's During Construction	4,285.09	.....	.....	4,285.09
Injs. to Persons	5,969.18	.....	.....	5,969.18
Total .....	.....	.....	.....	.....

III.—EQUIPMENT.	
Steam Locomotives	\$ 282,731.81
Pass. Train Cars.	135,023.28
Frt. Train Cars.	6,931,420.81
Work Equipment.	64,440.39
Floating Equip't.	.....
Total	\$ 7,413,616.29
	\$ 3,358,305.89
	\$ 10,771,922.18

GENERAL BALANCE SHEET.

LIABILITIES.	
Capital Stock:	
Common Stock	\$ 110,839,100.00
Mortgage, Bonded and Secured Debt:	
Funded Debt—Mortgage Bonds—	
Held by Company	\$ 11,311,600.00
Not Held by Company	192,538,200.00
Collateral Trust Bonds—	
Held by Company	\$ 216,500.00
Not Held by Company	7,093,700.00
Plain Bonds—	
Held by Company	\$ 76,000.00
Not Held by Company	3,591,000.00
Total	\$ 214,827,000.00
Working Liabilities:	
Loans and Bills Payable	\$ 1,900,000.00
Traffic and Car Service Balances due to other Companies	1,493,403.70
Audited Vouchers and Wages Unpaid	9,204,133.29
Miscellaneous Accounts Payable	334,911.37
Matured Interest and Dividends Unpaid	2,176,695.75
Matured Mortgage, Bonded and Secured Debt Unpaid	25,000.00
Other Working Liabilities	45,809.41
Total	\$ 15,179,953.52
Accrued Liabilities not Due:	
Unmatured Interest and Sinking Fund Payments	\$ 1,431,288.32
Taxes Accrued	104,400.00
Total	\$ 1,535,688.32
Deferred Credit Items:	
Operating Reserves	\$ 2,029,340.12
Liability on Account of Provident Funds	496,538.89
Other Deferred Credit Items	478,691.33
Total	\$ 3,004,570.34
Appropriated Surplus:	
Additions to Property since June 30, 1907, through Income	\$ 27,146,235.22
Reserves from Income or Surplus—Invested in Sinking Funds	34,625,208.71
Not Specifically Invested	3,740,856.09
Total	\$ 65,512,300.02
Profit and Loss	\$ 93,194,106.96
Grand Total	\$ 504,092,719.16

III.—GENERAL EXPENDITURES.

Interest and Commissions	Cr. \$618.56	..... Cr. \$618.56
Other Expenditures	Cr. 1,347,438.21	..... Cr. 1,347,438.21
Total	Cr. 1,348,056.77	..... Cr. 1,348,056.77
Grand Total..	\$2,215,706.83	\$11,132,442.10
		\$*5,725,018.98

*Of this amount \$9,143.91 was charged to previously appropriated surplus.

NEW WORK.

During the year the line extending southerly from Laurel, Montana, was almost completed to Orin Junction, Wyoming, where, since the close of the year, it has been connected with the Colorado & Southern Railway.

Construction has been carried on for a connection of the Northport-Guernsey line with the Colorado & Southern Railway at Wendover, Wyoming.

Work has been begun on the construction of the Chalco-Yutan line, which is a cut-off connecting Omaha and Sioux City.

\$1,243,481.60 has been expended for second track, and there have been placed in operation during the year 135.15 miles of main track, 73.81 miles of second track and 87.69 miles of other tracks.

Additional land for needed facilities has been purchased at Chicago, and Aurora, Illinois, and at other points.

A number of freight houses and passenger stations have been built.

Following is the report of the General Auditor, with statements prepared by him.

By order of the Board of Directors.

HALE HOLDEN,
President.

INCOME ACCOUNT.

OPERATING INCOME.

RAIL OPERATIONS—

Operating Revenues:	
Revenue from Transportation:	
Freight	\$62,799,188.01
Passenger	21,743,507.05
Excess Baggage	287,944.77
Mail	2,428,503.50
Express	2,595,965.75
Milk	377,232.35
Other Passenger Train	9,919.77
Switching	1,301,641.68
Special Service Train	40,147.75
Miscellaneous Transportation	99,545.43
	\$91,683,596.06
Revenue from Operations other than Transportation:	
Station and Train Privileges	\$ 8,264.40
Parcel Room Receipts	11,485.97
Storage—Freight	38,999.32
Storage—Baggage	16,798.42
Car Service	331,423.51
Telegraph and Telephone Service	209,402.61
Rent of Buildings and other Property	118,396.51
Miscellaneous	206,146.32
	940,917.06
Joint Facilities, Dr.	\$ 229.09
Joint Facilities, Cr.	126,650.12
Total Operating Revenues	\$92,750,934.15

FUNDED DEBT OF THE CHICAGO, BURLINGTON & QUINCY RAILROAD COMPANY.

Designation of Bond or Obligation.	Term.		Total Par Value Authorized.	Total Par Value Outstanding.	Total Par Value Held by or for Company.			Total Par in the Hands of the Public.	Rate.	Interest.	
	Date of Issue.	Date of Maturity.			In Treasury.	Pledged as Collateral.	In Sinking Funds.			When Payable.	Amt. Accrued During the Year.
MORTGAGE BONDS.											
C. B. & Q. R. R.:											
General Mortgage	1908	1958	\$74,865,000	\$74,865,000	\$10,618,000	.....	.....	\$64,247,000	4	M. & S.	\$2,828,440.03
Illinois Division	1899	1949	50,835,000	50,835,000	384,000	.....	.....	50,451,000	3½	J. & J.	1,779,225.00
Illinois Division	1899	1949	34,165,000	34,165,000	189,000	.....	.....	33,976,000	4	J. & J.	1,366,600.00
Iowa Division Mortgage Sinking Fund Bonds.....	1879	1919	3,000,000	2,082,000	.....	.....	.....	2,082,000	5	A. & O.	105,537.55
Iowa Division Mortgage Sinking Fund Bonds.....	1879	1919	12,502,000	5,374,000	19,000	.....	.....	5,355,000	4	A. & O.	216,100.03
Nebraska Extension Mortgage Sinking Fund Bonds.....	1887	1927	29,441,000	21,939,000	23,000	\$31,000	.....	21,885,000	4	M. & M.	887,526.67
B. & M. R. R. in Nebraska:											
Consolidated Mortgage Sinking Fund Bonds	1878	1918	13,751,000	13,613,000	43,000	.....	\$11,363,800	2,206,200	6	J. & J.	816,780.00
Republican Valley R. R.:											
Mortgage Sinking Fund Bonds	1879	1919	2,643,000	932,800	600	.....	817,000	115,200	6	J. & J.	55,968.00
Tarkio Valley R. R.:											
Mortgage Bonds	1880	1920	430,000	22,000	1,000	.....	.....	21,000	7	J. & D.	1,925.00
Nodaway Valley R. R.:											
Mortgage Bonds	1880	1920	388,000	22,000	3,000	.....	.....	19,000	7	J. & D.	1,860.83
COLLATERAL TRUST BONDS.											
C. B. & Q. R. R.:											
Sinking Fund Bonds (Denver Extension)	1881	1922	7,968,000	7,310,200	216,500	.....	5,443,500	1,650,200	4	F. & A.	292,408.00
PLAIN BONDS.											
C. B. & Q. R. R.:											
Sinking Fund Bonds.....	1881	1921	4,300,000	3,667,000	76,000	.....	3,030,000	561,000	4	M. & S.	146,680.00
Total .....	....	....	\$234,288,000	\$214,827,000	\$11,573,100	\$31,000	\$20,654,300	\$182,568,600	...	....	\$8,499,051.11

SOUTHERN PACIFIC COMPANY—THIRTIETH ANNUAL REPORT

REPORT OF THE BOARD OF DIRECTORS.

NEW YORK, October 29, 1914.

To the Stockholders of the Southern Pacific Company:

The Board of Directors submit herewith their report of the operations of the Southern Pacific Company and of the Proprietary Companies for the fiscal year ended June 30, 1914.

PROPERTIES AND MILEAGE.

The transportation lines constituting the Southern Pacific System, June 30, 1914, were as follows:

Divisions.	First Main Track.	Additional Main Track.	Fer- ries.	Water Lines.	Miles.
A.—Mileage of lines belonging to or leased by Companies, the capital stocks of which are principally owned by the Southern Pacific Company.					
(1)—Operated by the Southern Pacific Company under leases:					
Central Pacific Ry.....	2,205.46	251.70	852.24	9.90	125
Oregon & California R. R.	697.45	2.85	165.91		
Southern Pacific R. R.	3,497.37	190.02	1,486.59	3.00	
South Pacific Coast Ry.....	106.69	20.46	49.59	3.00	
(2)—Operated by the owning Companies:					
Morgan's Louisiana & Texas Railroad and Steamship Co.....	404.53	40.22	228.50	3.00	
Louisiana Western R. R.	207.74	—	70.15		
Texas & New Orleans R. R.	458.03	3.46	177.06		
Galveston, Harrisburg & San Antonio Ry.....	1,342.08	6.59	325.85		
Houston East & West Texas Ry.	190.94	—	56.03		
Houston & Shreveport R. R.	39.78	—	7.35		
Houston & Texas Central R. R.	829.66	1.27	245.27		
Southern Pacific Terminal Company	—	—	22.31		
Arizona Eastern R. R.	366.74	—	79.77		
Corvallis & Eastern R. R.	140.58	—	15.80		
Southern Pacific Company.....	—	—	—	—	4,683
B.—Mileage of lines belonging to Companies, the capital stocks of which are principally owned by the Morgan's Louisiana & Texas R. R. & S. S. Co., but which are operated by the owning Companies.					
Iberia & Vermilion R. R.	21.44	—	7.00		
Direct Navigation Co.	—	—	—	—	65
Total	10,508.49	516.57	3,789.42	18.90	4,873
Less operated jointly by Proprietary Co.'s.....	31.49	9.97	.49		
Total mileage operated June 30, 1914	10,477.00	506.60	3,788.93	18.90	4,873
Total mileage operated June, 1913	10,330.06	425.10	3,674.92	18.90	4,997
Increase	146.94	81.50	114.01	—	—
Decrease	—	—	—	—	124

The total operated mileage of the lines constituting the Southern Pacific transportation system, and of the lines of other companies controlled by the Southern Pacific Company, including 400.99 miles of the Northwestern Pacific Railroad Company and 49.47 miles of the Sunset Railway Company, one-half of the capital stocks of which is owned by the Southern Pacific Company, amounted, on June 30, 1914, to 13,278.93 miles.

INCOME FOR THE YEAR.

The income for the year ended June 30, 1914, of the Southern Pacific Company and of the Proprietary Companies, combined, excluding offsetting accounts, compared with last year, is as follows:

	This Year.	Last Year.	+ Increase. — Decrease.	Per Cent.
Average miles of rail-way operated:				
Lines East of El Paso	3,459.16	3,435.01	+ 24.15	.70
Lines West of El Paso	6,962.49	6,875.98	+ 86.51	1.26
Total	10,421.65	10,310.99	+ 110.66	1.07

OPERATING INCOME.

Revenue from transportation—rail lines..... \$126,614,536.84 \$130,353,692.66 —\$3,739,155.82 2.87

Revenue from outside operations 11,905,721.72 | 12,421,012.41 | — 515,290.69 | 4.15 |

Total **\$138,520,258.56** | **\$142,774,705.07** | **—\$4,254,446.51** | **2.98** |

Operating expenses—rail lines \$82,800,066.77 | \$82,135,109.49 | + \$664,957.28 | .81 |

Expenses outside operations 10,862,200.16 | 10,734,300.58 | + 127,899.58 | 1.19 |

Taxes (rail lines and properties dealt with as outside operations) 7,162,624.57 | 5,697,285.83 | + 1,465,338.74 | 25.72 |

Total **\$100,824,891.50** | **\$98,566,695.90** | **+\$2,258,195.60** | **2.29** |

Net operating income over expenses and taxes \$37,695,367.06 | \$44,208,009.17 | —\$6,512,642.11 | 14.73 |

OTHER INCOME.

Interest on bonds owned of Proprietary Companies	\$3,612,450.71	\$3,512,526.07	+ \$99,924.64	2.84
Interest on bonds owned of Affiliated Companies	3,437,343.97	2,844,230.56	+ 593,113.41	20.85
Interest on bonds owned of Other Companies	345,243.61	490,809.71	— 145,566.10	29.66
Dividends on stocks owned of companies other than Proprietary Companies	3,656,276.04	3,230,061.82	+ 426,214.22	13.20
Income from lands and securities, not pledged for redemption of bonds	498,040.49	510,891.01	— 12,850.52	2.52
Income from sinking funds investments	296,309.57	263,742.90	+ 32,566.67	12.35
Balance of interest on loans and on open accounts other than with Southern Pacific Company and Proprietary Companies	1,795,239.28	1,369,218.04	+ 426,021.24	31.11
Hire of equipment	266,480.60	.....	+ 266,480.60	...
Miscellaneous income	196,306.40	129,053.14	+ 67,253.26	52.11
Total	\$14,103,690.67	\$12,350,533.25	+\$1,753,157.42	14.19
Total net operating and other income...	\$51,799,057.73	\$56,558,542.42	—\$4,759,484.69	8.42

FIXED AND OTHER CHARGES.

Interest on outstanding funded debt of Southern Pacific Co. and Proprietary Companies	\$27,415,733.89	\$25,809,405.90	+ \$1,606,327.99	6.22
Sinking fund contributions and income from sinking fund investments	805,702.07	773,834.49	+ 31,867.58	4.12
Hire of equipment—balance	—	600,581.05	— 600,581.05	...
Rentals for lease of road, joint tracks, yards and terminal facilities	644,675.79	702,030.44	— 57,354.65	8.17
Land department expenses	115,635.12	116,639.65	— 1,004.53	.86
Taxes on granted and other lands	292,583.15	256,934.39	+ 35,648.76	13.87
Miscellaneous expenses of Proprietary Companies	57,418.65	82,841.13	— 25,422.48	30.69
Taxes and other expenses of Southern Pacific Company	464,300.44	291,243.30	+ 173,057.14	59.42
Additions and betterments payable from income of Southern Pacific Company	21,094.49	71,219.37	— 50,124.88	70.38
Amortization of discount on funded debt	505,476.92	7,766.41	+ 497,710.51	...
Reserve for depreciation of rolling stock owned by Southern Pacific Company and leased to other companies	1,024,221.46	978,239.14	+ 45,982.32	4.70
Total	\$31,346,841.98	\$29,690,735.27	+\$1,656,106.71	5.58

Surplus over fixed and other charges \$20,452,215.75 | \$26,867,807.15 | — \$6,415,591.40 | 23.88 |

Surplus over fixed and other charges brought over (equivalent to 7.50 per cent. on the outstanding capital stock of the Southern Pacific Company) | | \$20,452,215.75 | |

Applied as follows:

Dividends on common stock, viz.:				
1½ per cent. paid January 2, 1914.....	\$4,090,086.08			
1½ per cent. paid April 1, 1914.....	4,090,086.08			
1½ per cent. payable July 1, 1914.....	4,090,086.08			
1½ per cent. payable October 1, 1914.....	4,090,086.08			
Dividends on stocks of Proprietary Companies held by the public.....	744.00			
				16,361,088.32

Surplus after payment of dividends..... \$4,091,127.43 | | | |

The details of Operating Income and Operating Expenses are fully dealt with under "Transportation Operations."

The increase in the income for the year from interest on loans and open accounts, results, principally, from the increase in investment advances to Affiliated Companies.

The increase in the interest on the outstanding funded debt is the result, principally, of a full year's interest charge this year on the One-Year Five Per Cent. Notes, and on the Equipment Trust Certificates of the Southern Pacific Company, issued in the latter part of last year.

The year's income is charged with \$805,702.07 for sinking fund contributions and income from sinking fund investments pledged for the redemption of bonds. The proceeds during the year from the sale of lands, also pledged for the redemption of bonds, amounted to \$3,040,909.54. These sums, aggregating \$3,846,611.61, are dealt with as Profit and Loss items, for the reason that they are applied in reducing the bonded indebtedness of the companies.

The increase in taxes and other expenses of the Southern Pacific Company, is the result, principally, of the increase in the amount of income tax paid to the United States Government, and of the increase in taxes paid to the State of Kentucky.

Under the provisions of the lease to the Southern Pacific Company, the expenditures for additions and betterments to the property of the South Pacific Coast Railway Company are payable by the lessee, and are, therefore, a charge to its income. Such expenditures for the year amounted to \$21,094.49.

The increase in the charge for amortization of discount on funded debt is the result, principally, of charging against this year's income both the remainder of the discount on the One-Year Five Per Cent. Notes issued in June of last year and retired in June of this year, and a full year's proportion of the discount on Equipment Trust Certificates issued in the latter part of last year.

On June 30, 1914, the principal of advances to the Southern Pacific Railroad Company of Mexico amounted to \$38,423,719.71. Interest accruing on these advances has not been taken into the income of the Southern Pacific Company.

CAPITAL STOCK.

There was no change during the year in the capital stocks of the Southern Pacific Company and of the Proprietary Companies. The amount outstanding June 30, 1914, was as follows:

Southern Pacific Company:

Common stock	\$272,672,405.64
Proprietary Companies:	
Common stock	\$315,800,572.00
Preferred stock	29,400,000.00

\$345,200,572.00

Stocks of Proprietary Companies outstanding

June 30, 1914, were held as follows:

Owned by Southern Pacific Company.....	\$344,767,400.00
Owned by Morgan's Louisiana & Texas R.	
R. & S. S. Co.....	349,500.00
In the hands of the public.....	83,672.00
Total	\$345,200,572.00

FUNDED DEBT.

To provide for the payment of \$26,000,000, par value, One-Year Five Per Cent. Secured Gold Notes, due June 15, 1914, for advances to be made to its various controlled companies for construction, additions and betterments, and for other corporate purposes, the Southern Pacific Company authorized an issue of Five Per Cent. Twenty-Year Convertible Gold Bonds to an amount not exceeding \$55,000,000, par value, to be dated June 1, 1914, and to mature June 1, 1934. The privilege was given to the holders of the capital stock of the company to subscribe to these bonds at par, on or before April 22, 1914, to the extent of twenty per cent. of their respective holdings, payment therefor to be made in three installments, viz.: \$333.32, at the time of making subscription, on or before April 22, 1914; \$333.32, on or before June 1, 1914, and \$333.36, on or before July 10, 1914. The subscriptions amounted to \$54,534,000.00, of which the sum of \$51,526,426.58 was received to June 30, 1914.

The bonds are convertible into paid up shares of capital stock of the company at \$100 per share of \$100 par value on or at any time before June 1, 1924, or, if before that date called for redemption, then up to thirty days prior to the redemption date mentioned in the call for redemption. All such bonds at any time outstanding (but not part thereof) are redeemable at the option of the Company at 105 per cent. of the par value thereof and accrued interest on June 1, 1919, or on any semi-annual interest date thereafter upon not less than ninety days previous notice.

In September, 1913, to provide for the purchase of new equipment, an equipment trust known as "Southern Pacific Company Equipment Trust, Series B," was created and an issue of \$2,010,000, par value, Four and One-Half Per Cent. Equipment Trust Certificates authorized, all of which the trust provides shall be guaranteed by the Southern Pacific Company. The entire \$2,010,000, par value, of certificates authorized were issued during the year.

The remaining \$5,120,000, par value, of Southern Pacific Company Equipment Trust Certificates, Series A authorized in March, 1913, as mentioned in last year's report, were also issued during the year.

The funded and other fixed interest-bearing debt of the Southern Pacific Company and Proprietary Companies outstanding at the beginning of the year, was as follows:

Southern Pacific Company.....	\$165,581,910.00
Proprietary Companies	456,034,091.68

\$621,616,001.68

Issued during the year:

Southern Pacific Company:

Equipment Trust Certificates Series "A"	\$5,120,000.00
Equipment Trust Certificates Series "B"	2,010,000.00
Five Per Cent. Twenty Year Convertible Gold Bonds, Subscription Receipts....	51,526,426.58
One-Year Five Per Cent. Secured Gold Notes	6,000,000.00

\$64,656,426.58

Arizona Eastern Railroad Company:

First and Refunding Mortgage Five Per Cent. Bonds	2,155,000.00
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66,811,426.58

Retired during the year:

Southern Pacific Company.

One-year Five Per Cent. Secured Gold Notes due June 15, 1914, paid off..	\$26,000,000.00
Equipment Trust Certificates Series "A" due March 1, 1914, paid off. 1,012,000.00	

\$27,012,000.00

Arizona Eastern Railroad Company.

Gila Valley, Globe & Northern Railway Company Five Per Cent. First Mortgage Bonds:	
Purchased from payments to sinking fund	2,000.00

2,000.00

Central Pacific Railway Company.

Three and One-Half Per Cent. Mortgage Gold Bonds:	
Purchased from sale of lands	\$428,000.00
Purchased from sale of securities	391,000.00
Purchased from payments to sinking fund	8,000.00

\$827,000.00

Less: Bonds included in above which were purchased prior to June 30, 1913, but which were cancelled during the present fiscal year.....	98,000.00
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729,000.00

First Refunding Mortgage Four Per Cent. Bonds:	
Purchased from payments to sinking fund	27,000.00

27,000.00

Houston & Texas Central Railroad Company.

First Mortgage Five Per Cent. Bonds:	
Purchased from proceeds of lands sold.	71,000.00

71,000.00

General Mortgage Five Per Cent. Bonds due July 1, 1913, paid off....	1,000,000.00
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South Pacific Coast Railway Company.

First Mortgage Four Per Cent. Bonds:	
Purchased from payments to sinking fund	235,000.00

235,000.00

Southern Pacific Railroad Company.

First Refunding Mortgage Four Per Cent. Gold Bonds:	
Purchased from payments to sinking fund	13,000.00

13,000.00

Texas & New Orleans Railroad Company.

Payments to State of Texas for account of School Fund Debts.....	5,459.44
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29,094,459.44

Amount of funded and other fixed interest-bearing debt of the Southern Pacific Company and Proprietary Companies outstanding June 30, 1914..... \$659,332,968.82

\$659,332,968.82

Net increase during the year..... \$37,716,967.14

The outstanding bonds are held as follows:

If in the hands of the public..... \$584,410,619.29

Owned by the Southern Pacific Company.. \$62,165,349.53

Owned by Proprietary Companies..... 3,554,000.00

Held in Sinking Funds of Proprietary Companies 9,203,000.00

74,922,349.53

\$659,332,968.82

ASSETS AND LIABILITIES.

The combined assets and liabilities of the Southern Pacific Company and of the Proprietary Companies, on June 30, 1914, and the increases and decreases during the year, excluding the offsetting accounts between the Companies, summarized, were as follows:

INVESTMENTS.	Total June 30, 1914.	Increase.	Decrease.
Investment in road and equipment	\$902,631,959.28	\$19,755,936.39	
Sinking funds	*12,226,059.84	578,100.81	
Deposits in lieu of mortgaged property sold	15,694.24	1,799.63	
Improvements on leased railway property	356,844.08	53,644.91	
Miscellaneous physical property	*16,792,531.80	—	\$124,543.83
Stocks and bonds owned of Proprietary and Affiliated Companies	*415,830,946.61	3,089,882.16	
Advances to Affiliated Companies	105,524,690.33	14,577,743.54	
Other investments	15,033,270.06	—	470,622.67
	\$1,468,411,996.24	\$37,461,940.94	

CURRENT AND DEFERRED ASSETS.		Total June 30,	Increase.	Decrease.	Other transportation revenues	1,213,384.83	1,332,463.69	-119,078.86	8.94
Cash and demand loans and deposits	\$19,170,584.79	1914.	—	\$148,447.46					
Special deposits	87,286.40		—	2,521,930.73					
Other cash accounts.....	15,092,096.03	\$2,761,560.60							
Material and supplies.....	18,682,686.49	1,544,613.15							
Deferred assets	6,021,735.14	19,070.09							
			\$59,054,388.85	\$1,654,865.65					
UNADJUSTED DEBITS.									
Discount on funded debt.....	\$8,346,750.78	\$1,464,558.48							
Other unadjusted debits.....	3,896,498.98	—	\$1,409,000.56						
			\$12,243,249.76	\$55,557.92					
Total assets	\$1,539,709,634.85	\$39,172,364.51							
STOCK.									
Capital stock of Southern Pacific Company	\$272,672,405.64								
Capital stock of Proprietary Companies	*345,200,572.00								
			\$617,872,977.64						
LONG TERM DEBT.									
Funded debt of Southern Pacific Company	\$203,226,336.58	\$37,644,426.58							
Funded debt of Proprietary Companies	*456,106,632.24	72,540.56							
			\$659,332,968.82	\$37,716,967.14					
Nonnegotiable debt to Affiliated Companies	\$1,467,388.61	—	\$3,086,271.76						
			\$660,800,357.43	\$34,630,695.38					
CURRENT AND DEFERRED LIABILITIES.									
Audited accounts and wages payable	\$8,259,352.31	—	\$4,587,854.81						
Interest and dividends matured unpaid	8,074,420.80	—	2,064,265.01						
Unmatured dividends declared..	4,090,086.08								
Unmatured interest accrued...	5,541,822.41	\$261,478.17							
Other cash accounts.....	4,338,022.28	—	102,139.93						
Deferred liabilities	874,027.42	23,615.45	—						
			\$31,177,731.30	—	\$6,469,166.13				
UNADJUSTED CREDITS.									
Accrued depreciation	\$34,168,162.57	\$23,846,976.16							
Other unadjusted credits.....	26,800,825.99	—	\$8,684,353.14						
			\$60,968,988.56	\$15,162,623.02					
Total liabilities	\$1,370,820,054.93	\$43,324,152.27							
Balance to credit of Profit and Loss	\$168,889,579.92	—	\$4,151,787.76						
Total	\$1,539,709,634.85	\$39,172,364.51							

*The outstanding capital stock and funded debt include Proprietary Companies' capital stocks and funded debt of the par value of \$345,116,900 and \$74,922,349.53, respectively, a total of \$420,039,249.53, which securities are owned by the Southern Pacific Company or by Proprietary Companies, or are held in sinking funds of Proprietary Companies. The cost of these securities is included in the investments shown above. Of the said amount, stocks of the par value of \$249,653,161, which stand charged on the books at \$232,932,667.41, are pledged against the issue of Southern Pacific Company stock and bonds.

The value of the granted lands belonging to the Central Pacific Railway Company and to the Oregon and California Railroad Company, which remained unsold at the close of the year, is not included in the statement of the assets of the said companies.

TRANSPORTATION OPERATIONS.

The results of the year's transportation operations compared with those of last year are as follows:

	This Year.	Last Year.	Increase or Decrease.	Per Cent.
Average miles of railway operated	10,421.65	10,310.99	110.66	1.07
OPERATING INCOME.				
Freight	\$78,369,414.08	\$80,141,498.84	-\$1,772,084.76	2.21
Passenger	40,485,949.07	42,389,837.48	-1,903,888.41	4.49
Mail	2,562,342.64	2,460,309.29	102,033.35	4.15
Express	2,622,158.72	2,757,259.88	-135,101.16	4.90

Other transportation revenues	1,213,384.83	1,332,463.69	-119,078.86	8.94
Revenues from operations other than transportation	1,361,287.50	1,272,323.48	88,964.02	6.99
Total—rail lines....	\$126,614,536.84	\$130,353,692.66	-\$3,739,155.82	2.87
Revenues from outside operations	11,905,721.72	12,421,012.41	-515,290.69	4.15
Total	\$138,520,258.56	\$142,774,705.07	-\$4,254,446.51	2.98
OPERATING EXPENSES.				
Maintenance of way and structures	\$16,064,457.14	\$15,589,026.66	\$475,430.48	3.05
Maintenance of equipment	18,934,335.01	19,295,724.63	-361,389.62	1.87
Traffic expenses	2,889,418.58	3,115,078.74	-225,660.16	7.24
Transportation expenses	40,936,821.47	40,408,953.93	527,867.54	1.31
General expenses	3,975,034.57	3,726,325.53	248,709.04	6.67
Total—rail lines....	\$82,800,066.77	\$82,135,109.49	\$664,957.28	.81
Expenses outside operations	10,862,200.16	10,734,300.58	127,899.58	1.19
Taxes	7,162,624.57	5,697,285.83	1,465,338.74	25.72
Total	\$100,824,891.50	\$98,566,695.90	\$2,258,195.60	2.29
Net operating income over expenses and taxes				
	\$37,695,367.06	\$44,208,009.17	-\$6,512,642.11	14.73
FREIGHT TRAFFIC.				
Tons of commercial freight carried	31,959,625	31,642,587	317,038	1.00
Tons of commercial freight carried one mile	6,987,916,295	7,034,174,870	-46,258,575	.66
Average tons per revenue train mile—all freight:				
East of El Paso...	399.43	378.58	20.85	5.51
West of El Paso...	510.30	508.35	1.95	.38
All lines	471.21	460.84	10.37	2.25
Average number of loaded cars in freight trains:				
East of El Paso...	18.95	17.98	.97	5.39
West of El Paso...	24.10	23.71	.39	1.64
All lines	22.28	21.61	.67	3.10
Average tons per loaded car mile—all freight:				
East of El Paso...	21.08	21.05	.03	.14
West of El Paso...	21.18	21.44	-.26	1.21
All lines	21.15	21.32	-.17	.80
Percentage of loaded car miles to total:				
East of El Paso...	70.91	72.01	-1.10	1.53
West of El Paso...	70.25	70.62	-.37	.52
All lines	70.45	71.04	-.59	.83
Average revenue per revenue train mile—commercial freight..	\$4.39	\$4.33	\$0.06	1.39
Average revenue per ton per mile—commercial freight	1.110 cents.	1.123 cents.	-.013 cents.	1.16
Average distance hauled — commercial freight	218.65 miles.	222.30 miles.	-3.65 miles.	1.64

PASSENGER TRAFFIC.	Total revenue passengers carried—including ferry suburban.	42,744,673	42,006,240	738,433	1.76
Total revenue passengers carried one mile—including ferry suburban	1,748,983,080	1,834,380,082	-\$85,397,002	4.66	
Average total revenue per passenger train mile	\$1.34	\$1.64	-\$0.30	18.29	
Average revenue per passenger per mile..	2.247 cents.	2.248 cents.	-.001 cents.	.04	
Average distance carried—including ferry suburban	40.92 miles.	43.67 miles.	-2.75 miles.	6.30	

During the past ten years, with an increase of 24.46 per cent. in mileage Company's lines were abnormal during the year, and obstructions to traffic caused serious losses in earnings and heavy increases in expenses.

In every month of the fiscal year, except November, damages from washouts and landslides were frequent and embarrassing. The total number of interruptions was 227, with an average delay of three days each. The most serious interruptions were:

Eight days on Louisiana line, in September, from floods in the Calcasieu River.

Five days in October, on Victoria Division, and from two to sixteen days in December, at various points on the Houston and Victoria Divisions of Galveston, Harrisburg & San Antonio Railway and on Houston & Texas Central Railroad from phenomenal rains in Texas.

Seven days between Colton and Los Angeles, eleven days between Los Angeles and Ventura, sixteen days between Ventura and Santa Barbara, and seventeen days on the coast line north of Santa Barbara, from the heaviest rains, in Southern California during January and February, of which there is any record.

The Nordhoff branch was cut to pieces and closed to traffic for forty-four days.

The continued sinking of the tracks in the Suisun marshes between Benicia and Sacramento, was the cause of very heavy expense, although the constant presence of large forces kept the tracks open for the safe but slow passage of trains.

On September 17th the lining of a tunnel, 1,371 feet long, in the Santa Lucia Mountains, near San Luis Obispo, was destroyed by fire, the tunnel caved in, and interrupted traffic for sixty days.

These unusual conditions caused serious losses in earnings, while the expenses for repairs amounted to \$1,278,527, an increase over expenses of a similar character in the preceding year of \$880,398. On our California lines alone, a further expenditure of \$1,284,000 will be required to restore previous conditions and to provide reasonable protection against future damage. Of this amount \$475,000 will be chargeable to Operating Expenses, and \$809,000 to Additions and Betterments.

The large decrease in passenger and express earnings is attributable to deferred travel in anticipation of the California Expositions and numerous conventions to be held on the Pacific Coast in 1915; the diminished transportation of labor incident to the postponement of new enterprises; the curtailment of excursion, tourist and commercial travel by enforced economy; increased competition of interurban electric lines and motor vehicles; and reduction in express rates by the Interstate Commerce Commission and the Railroad Commission of California, which became effective in February and March of this year.

Notwithstanding the yield of normal crops in sections served by these lines, there has been a decrease in gross freight revenue of \$1,772,084.76, due to a substantial curtailment of shipments of forest products in Louisiana and Texas resulting from the inability of railroads to make the usual purchases of cross-ties and from the postponement of other new construction requiring the use of lumber; the previous completion of electric power, water supply, irrigation and oil pipe line construction in California; and the extremely conservative purchases of merchandise.

Reduced rates compelled by influence of Federal and State Commissions which were in effect during last fiscal year and were not in effect throughout the previous year resulted in a shrinkage of at least \$500,000 in the gross revenue of these lines, and it is conservatively estimated that cumulative reductions of this character during a period of four years ending June 30, 1914, decreased the gross revenue of these lines at least \$4,000,000.

The decrease in net operating income over expenses and taxes, of \$6,512,642.11, or 14.73 per cent., was caused by a decrease of \$4,254,446.51, or 2.98 per cent., in total operating income, and an increase of \$2,258,195.60, or 2.29 per cent., in total operating expenses, due principally to an increase of \$1,465,338.74, or 25.72 per cent., in taxes. Operating expenses of rail lines include charges amounting to \$2,617,760 for extraordinary expenses as follows: Repairing flood damages, as hereinbefore mentioned, \$880,398; increased cost of locomotive fuel, \$843,886; higher wage schedules, \$221,404; increase in charges for renewal and depreciation of rolling stock as herein-after explained, \$672,072. But for these extraordinary charges, operating expenses of rail lines would have shown a decrease of \$1,952,803, or 2.38 per cent., instead of an increase of \$664,957. As an offset to these large increases in extraordinary items, substantial economies were effected by raising the average freight train load from 460.84 tons to 471.21 tons, and by promoting greater efficiency in the use of locomotive fuel, the latter being effected by the moving of 7.95 per cent. more gross ton miles per pound of fuel in freight service, and of 8.70 per cent. more gross tons miles per pound of fuel in passenger service. The saving in the fuel bill by this economy amounted to \$707,627.

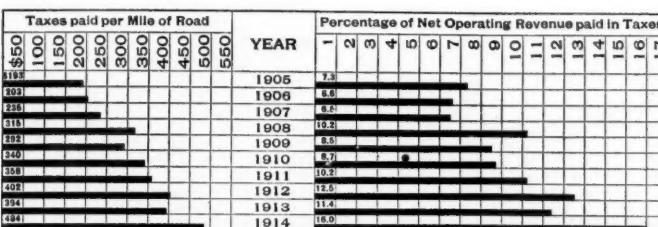
The accounting rules of the Interstate Commerce Commission, effective July 1, 1907, prescribe that estimated monthly charges shall be made to operating expense for depreciation of equipment, and that as equipment is retired from service, the amount of depreciation accrued prior to July 1, 1907, shall be charged to profit and loss. For many years prior to July 1, 1907, the transportation lines constituting the Southern Pacific System provided for the renewal or replacement of equipment condemned, sold, or otherwise disposed of, by charging operating expenses with the original cost thereof, less salvage, at the time the units of equipment were retired from service. In 1907 the Executive Committee of your Board, after giving the matter consideration, continued your Company's practice in lieu of that prescribed by the Interstate Commerce Commission, believing that as it recorded facts it was preferable to a method dealing with arbitrary estimates.

During the year 1912, a number of roads complied with the instructions of the Interstate Commerce Commission and adopted its rules, in consequence of which, on reconsideration, your Executive Committee directed that, commencing July 1, 1913, your Company should set up depreciation currently in accordance with the Interstate Commerce Commission rule, and should write off the depreciation that accrued prior to July 1, 1913, to profit and loss, at the time the units of equipment were retired from service. As the Commission objected, however, to this method of handling the accrued depreciation, the matter was again considered by your Executive Committee, which approved the Controller's action in yielding strict obedience to the instructions of the Interstate Commerce Commission in charging the depreciation that accrued prior to July 1, 1913, based on the estimated life of the equipment in service on that date, and amounting to \$22,458,476.54, to the profit and loss accounts of the system companies for the year just closed and crediting the same amount of reserve for "Accrued Depreciation—Equipment."

During the fiscal year ended June 30, 1913, charges to operating expenses on account of retirement of rolling stock equipment under the old plan, as explained above, amounted to \$1,518,986.18. Charges made during the fiscal year ending June 30, 1914, in accordance with rules prescribed by the Interstate Commerce Commission, amounted to \$2,191,058.48, or an increase of \$672,072.30.

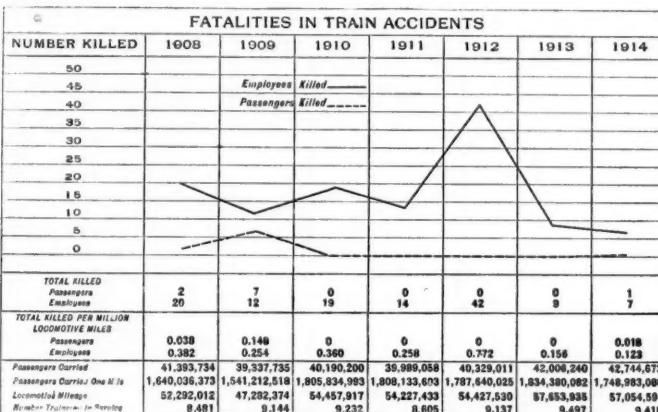
TAXES.

During the past ten years, with an increase of 24.46 per cent. in mileage of all tracks operated, taxes have increased \$4,809,871.06, or 204.44 per cent. This constant increase and its relation to the net operating revenue are shown graphically below:



SAFETY OF OPERATION.

In the derailment of a mixed train in the month of June, 1914, a passenger lost his life. This was the first fatality to a passenger in a train accident for FIVE YEARS AND TEN MONTHS, during which period 316,531,599 locomotive miles were run and 237,317,775 passengers were carried, involving 10,234,656,080 passengers carried one mile. In the year just closed, 7 employees out of 9,418 lost their lives through train accidents in running 57,054,594 locomotive miles. Out of 42,571 employees engaged in pursuits not involving train movements, 16 lost their lives, or one fatality to every 832,800 days, or 2,300 years worked.



GOVERNMENT ATTACK ON RIGHT TO CONTROL CENTRAL PACIFIC RAILWAY.

On February 11, 1914, the United States, acting through the Attorney-General, brought suit in the United States District Court for the District of Utah, against the Southern Pacific Company and the Central Pacific Railway Company, to separate the two companies, on the ground that their union in one system was in violation of the Federal Anti-Trust Act of 1890, known as the Sherman law, and also in violation of the Pacific Railroad Acts, meaning the acts of Congress providing for the construction of the Union Pacific and Central Pacific Railroads. The nature of this suit was fully explained in a circular issued to the stockholders of this company on February 5, 1914, after the Attorney-General had publicly announced his intention to endeavor to divorce the Southern Pacific Company from the Central Pacific Railway Company. The case is now at issue, and the Government, which has the opening, began taking its testimony on September 21, 1914. So much depends upon the time consumed by the Government and the nature of its testimony, that it cannot now be said with any certainty when the case will be ready for argument in the lower court. It may be assumed that an appeal to the Supreme Court of the United States will be taken by the losing party. While suits under the federal Anti-Trust Act have heretofore afforded striking examples of the uncertainty of the law, this much is certain, that a decision declaring the union under one management of the Southern Pacific Company and the Central Pacific Railway Company to be in violation of the Sherman law, would go far beyond any previous decision of the Courts. It would involve a construction of the law, which, if impartially applied, would result in the wholesale disintegration of the railroad systems of this country. We have, moreover, in this case the unusual advantage of having as our allies the very communities in whose supposed interest the suit was instituted. The charge that the common control of the Central Pacific lines and the Southern Pacific lines is inconsistent with the provisions of the Pacific Railroad Acts, is based on a construction of those acts which was discovered for the first time when needed as a weapon of attack in the present suit. The relations between the Central Pacific and the Union Pacific have always been harmonious. That they were in accord with the requirements of the acts of Congress has never been questioned during the forty years of their existence, until the Government last February asserted the contrary. We believe that the rights and interests of both companies, as well as the interests of the communities they serve, justify and require the vigorous defense which the management is prepared to make against the demand of the Government for a disruption of our system of roads.

GOVERNMENT ATTACK ON TITLE TO OIL LANDS.

On June 22, 1914, the Supreme Court of the United States decided in favor of the defendants the suit of Edmund Burke and others against the Southern Pacific Railroad Company and the Kern Trading and Oil Company. The object of this suit was to recover some 3,200 acres of the oil lands of defendants in California, on the ground that, by reason of the provision in the act of Congress containing the land grant excepting mineral lands, and especially by reason of a so-called mineral reservation clause in the Railroad Company's patents, the subsequent discovery of oil under the lands made the patents inoperative and defeated the Railroad Company's title to the lands. In deciding against claimant, the Supreme Court declared that the subsequent discovery of oil did not cause the lands to revert to the Government, and that the mineral reservation in the patents was unauthorized and inoperative. The Court, in effect, held that

the patents could be avoided only by proving that they had been fraudulently obtained, and that suits to set aside such patents must be brought within six years from the date of issuance of the patents. These principles are as applicable to a suit by the United States as to a suit by an individual.

It follows, as a result of the decision in the Burke case, that proven fraud alone can avail to defeat our title to our oil lands. We know there was no fraud in obtaining the patents, and we may consider that the danger of losing the lands is now removed. Moreover, except as to a comparatively small quantity of land, in respect to which suits have already been instituted, the six years period of limitation is believed to be a bar even to a suit alleging fraud.

There are four suits pending based on alleged fraud, three against the Southern Pacific Railroad Company and one against the Central Pacific Railway Company. The aggregate number of acres involved is 7,493. There are only two other suits pending relating to oil lands. The acreage involved is 89,450 acres. These suits were originally based solely on the supposed efficacy of the mineral reservation clause. Since the Burke case was decided, the Government has attempted to amend its pleadings by alleging fraud. Our counsel advises that these suits need cause us no apprehension, because the charge of fraud comes too late and because it cannot be proven.

It is a subject for much satisfaction that our title to the valuable lands in question may now be regarded as unassailable.

GENERAL.

Your Board repeats the suggestion made last year that you take an active part in repelling the attacks of demagogues on your property. Unfair treatment of railroads is due in great part to the belief of politicians that only financial magnates suffer therefrom. The surest remedy for the evil is for railroad investors to give unmistakable evidence of their numbers and of their resentment of unfair legislation or regulation. You now number over 30,000, and with the stockholders of other railroads and with investors in their securities you form a body of a million or more voters, whose protests, backed up by ballots, can lawfully exert sufficient force to compel fair treatment by your servants in Congress, in legislatures, and on commissions. The common interests of railroad shareholders and of investors in every community, no matter how small, should cause them to actively participate in every election and to perform faithfully all other duties of citizenship, in order to secure proper representatives and protection for their interests. While your Company has cheerfully made such expenditures as were required by Federal or State Commissions or by legislation, many unreasonable laws have been enacted, which serve no public good, and which add unnecessarily to the cost of operation. There is, moreover, a continuous agitation for the passage of more laws to further burden the railways regardless of necessity or reason. During the fiscal year ended June 30, 1914, the cost of complying with such legislation and with the unreasonable requirements of Federal and State Commissions, has added \$1,099,405.00 to the operating expenses of your Company, viz.:

Cost of inspectors required by the Safety Appliance Act, and the Boiler Inspection Act.....	\$326,589.00
Increased cost incident to Full Train Crew laws, Hours of Service laws, and the law requiring self-cleaning ash-pans for locomotives	286,580.00
Cost of complying with laws requiring substitution of electric . for acetylene headlights.....	4,121.00
Cost of unnecessary train service required by railroad com- missions	18,872.00
Cost of physical valuation of property required by state com- missions	37,609.00
Cost of compiling statistics, printing tariffs, and other similar requirements of Federal and State Commissions.....	425,634.00
Total	\$1,099,405.00

In addition to the above, your Company lost approximately \$275,000 during the year through failure to obtain approval of the Arizona Railroad Commission to an issue of \$30,000,000, par value, two-year 5 per cent. secured gold notes, as hereinafter explained.

To provide funds for corporate purposes, arrangements were made with Bankers, in May, 1913, for sale of two-year notes at a very satisfactory price. Authority of the California Railroad Commission to issue the notes was obtained without delay; approval by the Arizona Corporation Commission, however, was withheld, pending certain assurances and guarantees on the part of the Company with reference to the conduct of its business in Arizona which it was not warranted in giving, and during the time the matter was pending before the Commission the condition of the money market had so changed that a sale of the notes could not be made. Further consideration of a two-year note issue was abandoned, and one-year notes, dated June 15, 1913, and maturing June 15, 1914, were issued instead, and sold at a price yielding approximately \$275,000 less than would have been received, had the two-year notes been issued without delay. Under the laws of California and Arizona the issue of one-year notes did not require Commission approval.

The construction of the line of the Northwestern Pacific Railroad Company from Willets toward Eureka, Cal., a distance of 105.64 miles, referred

to in the last annual report, has been completed, physical connection of the lines running north from Willets and south from Shively having been made on October 23, 1914. For the present, through freight business between San Francisco and Eureka is being handled at the convenience of the Company, and through daylight passenger service between those points will be commenced about November 15, 1914.

It is expected that with the opening of this line for business, and with the development of the country served, the earnings of the Company will be materially increased. One-half of the capital stock of this Company is owned by the Southern Pacific Company and one-half by the Atchison, Topeka & Santa Fe Railway Company.

On the lines of the Southern Pacific Railroad Company of Mexico, the revolutionary disturbances referred to in the last annual report have continued. Structures, track, and equipment have been destroyed and business conditions demoralized the result of which has been to decrease the revenues and to retard prospective traffic. The loss on account of the interruption to traffic from revolutionary causes, from the beginning of the Madero Revolution in 1910, to June 30, 1914, is estimated to be approximately 8,000,000 pesos. During the fiscal year ended June 30, 1914, the revenues of the line, including those derived from the transportation of troops and munitions of war, were considerably in excess of the expenditures made in connection with the maintenance and operation of the property. Only such maintenance work has been done, however, as was absolutely necessary to render it possible to operate the road. The Company has claims for loss and damage caused by revolutionary disturbances amounting to 287,000 pesos which have been approved by the Mexican Government, and claims amounting to approximately 1,846,000 pesos for troop train service and rental for road operated by the Mexican Government, none of which has been paid. Claims amounting to approximately 2,174,000 pesos, covering additional losses on account of revolutionary disturbances will be presented to the Mexican Government in due course.

There still remains to be completed 99.47 miles of line from Tepic to La Quemada. The revolutionary disturbances preclude any thought of completing this mileage at the present time.

In addition to the completed lines of railway reported under "Properties and Mileage," and the railways of the Northwestern Pacific Railroad Company and the Southern Pacific Railroad Company of Mexico referred to above, construction either was completed or is progressing on the lines of the following companies, viz.:

	Length of Pro- jected Line. Miles.	Track plied. Miles.	Grading Com- pleted. Miles.	Grading Fro- miling. Miles.
<i>Central Pacific Railway:</i>				
Colfax to Blue Canon, Cal.— second track:				
Length of projected line.....	25.42			
Less placed in operation.....	13.22			
		— 12.20	9.39	2.08 .73
<i>Fernley, Nev., to Westwood Junction, Cal.:</i>				
Length of projected line.....	125.41			
Less placed in operation.....	106.21			
		— 19.20	*19.20	
<i>Westwood Junction to Westwood, Cal. Colusa & Hamilton Railroad:</i>				
Hamilton to Harrington, Cal.....	61.15	40.95	13.63	6.57
<i>Galveston, Harrisburg & San Antonio Railway:</i>				
Bay Shore Junction to Seabrook, Tex.	11.24	2.63	4.13	4.48
<i>Houston & Texas Central Railroad:</i>				
Eureka to Stella, Tex.....	9.50	†9.50		
<i>Willamette Pacific Railroad:</i>				
Eugene to Marshfield, Ore.....	121.50	39.31	42.94	39.25

*Opened for traffic September 1, 1914. †Opened for traffic July 27, 1914.

The reduction in our surplus over fixed and other charges, due to causes largely beyond control, has imposed on your Company the necessity of reducing the expenditures for new construction, additions to and betterments of the property, to the lowest possible limit. The uncompleted work, listed above, is being slowly carried on to protect the investment already made, but no extensions or improvements of any description, not imperatively needed for protection of the property, are being authorized or even considered.

Under the pension system put into effect on January 1, 1903, six hundred and eighty-eight employees are carried on the pension rolls of the rail and water lines. The payments to them for the year amounted to \$300,630.98.

By order of the Board of Directors,

JULIUS KRUTTSCHNITT,

Chairman of the Executive Committee.